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GOVERNMENT DOCUMENTS

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APPLICATION FOR EXEMPTION
UNDER SECTION 29 OF
THE ENVIRONMENTAL ASSESSMENT ACT
FOR
PROPOSED HAMILTON WATERFRONT MASTER PLAN
BY
THE CORPORATION OF THE CITY OF HAMILTON

Prepared by

Booth Aquatic Research Group Inc.

July, 1986

CA4 ONHBL A35
86 A62

ROBERT M. MORROW
MAYOR

Hamilton

1986 July 4

The Honourable James Bradley,
Minister of the Environment,
135 St. Clair Avenue West,
15th Floor,
Toronto, Ontario,
M4V 1P5

Re: Hamilton Waterfront Project

Dear Mr. Minister:

We are submitting for your consideration a request that the Hamilton Waterfront Development be exempt from the Environmental Assessment Act in accordance with Section 29 of the Act.

During the past year, we have consulted extensively with the public through public meetings and television and radio phone-in shows, and we believe that the development concept of the Master Plan enjoys full and enthusiastic public support.

We have liaised closely with the Environmental Assessment Branch of your Ministry since commencement of the design of the Master Plan and believe we have faithfully followed their guidelines for the processes of preparing this request. All those government agencies indicated by the Environmental Assessment Branch were consulted prior to preparing the attached document. Any concerns raised during this preconsultation process have been addressed in the document. No major concerns remain outstanding. The screening criteria provided by your Ministry have been examined and we are confident that each criterion has been answered satisfactorily. Section V of our report summarizes our response to each of the criteria.

positive im

In conclusion, it is our belief that the proposed development has a net positive impact on the social, economic and natural environment of the area and poses no significant negative impacts. On that basis, we request that you consider exempting the Hamilton Waterfront Project from the Environmental Assessment Act under Section 29.

Yours very truly,

Robert M. Morrow,
Mayor,
City of Hamilton

GMB/rs

DRAFT

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Exemption Order No.____

ORDER MADE UNDER THE
ENVIRONMENTAL ASSESSMENT ACT

Having received a request from The Corporation of the City of Hamilton or any board, agency of corporation acting on behalf of the City that an undertaking, namely:

> The activity of constructing and operating a new park development on the Hamilton Waterfront, including an artificial pond, upgraded marina facilities, landscaping for walks, facilities for a permanent community flower display and associated road upgrading, parking facilities and amenities;

be exempt from the application of the Act pursuant to Section 29; and

Having been advised by the proponent that if the undertaking is subject to the application of the Act, the following damage or interference with the persons indicated will occur:

A. The City of Hamilton will be damaged and interfered with because of the time and cost required to proceed with an environmental assessment for a project which will have no significant adverse effects on the environment;

B. The people of the City of Hamilton and the Region nearby and tourists visiting this area will be interfered with and possibly damaged because they will lose the opportunity of having the recreational facilities which will be offered by the proposed development;

C. The existing landfill and shoreline will be subject to erosion due to wave action and uncontrolled runoff which will cause increased lake sedimentation in the area;

D. Area residents would be interfered with by the delay of remedial site landscaping, the purpose of which is to improve the aesthetics of the site following the completed excavation of industrial wastes;

E. The delay in finalizing the plans for upgraded marina facilities will cause undue hardship for the existing boat clubs who wish to implement their own plans if the proposed development does not proceed;

Having weighed such injury, damage or interference against the betterment of the people of the whole or any part of Ontario by the protection, conservation and wise management in Ontario of the environment which would result from the undertaking being subject to the application of the Act;

The undersigned is of the opinion that it is in the public interest to order and orders that the undertaking is exempt from the application of the Act for the following reasons:

A. The proposed development has been the subject of a preliminary environmental impact study, including extensive pre-submission consultation with all concerned government and other agencies, and which reports that no significant environmental impacts will result from implementation of the plan; those impacts which cannot be circumvented, such as the temporary impacts of construction, are discussed and mitigative measures are outlined in the study;

B. A market feasibility study was undertaken prior to development of the proposed plan which indicated a need for this type of development to draw tourists to the area and to supply a local and regional demand for recreational opportunities of the type proposed within the City of Hamilton;

C. The proposed development would bring significant direct and indirect economic benefits to the City of Hamilton and to the Province as a whole;

D. Extensive public interaction has indicated overwhelming public support for the scheme;

E. The proposed development conforms with the masterplan for the area produced in conjunction with citizen groups and City planners;

F. The project has been endorsed by the City Council of the City of Hamilton.

G. The proposed development will complement and enhance local and regional recreational opportunities;

H. The proposed development will improve the quality of the natural environment and the aesthetic quality of the affected area;

I. Application of the Act would result in delays in project implementation and thereby delay the beneficial effects of economic stimulation to the private sector;

This exemption is subject to the following terms and conditions:

1. The City of Hamilton shall submit in writing to the Director of the West Central Region of the Ministry of the Environment a design for an overall monitoring program to ensure no adverse environmental impacts occur;

2. This exemption will expire if the City of Hamilton does not commence construction by September 1, 1987.

Dated this ____ day of _____, 1986.

_____
Minister of the Environment

Approved by O.C. No. ____/__.

O. Reg. No. ___/__.

Filed with the Registrar of Regulations, _____, 1986.

Ontario Gazette _____, 19__.

I. INTRODUCTION

The Corporation of the City of Hamilton is requesting an exemption under Section 29 of the Environmental Assessment Act for the implementation of the Hamilton Waterfront Master Plan, a plan to develop the only available public land on the Hamilton waterfront into a recreational focal point for the City and the region. The request is based on the conclusion, justified in this report, that the impacts of the proposed development on the environment are either positive or insignificant.

Screening criteria for determining environmental impacts suggested by the Environmental Assessment Branch of the Ministry of the Environment have been applied to the proposed development. A summary of this assessment can be found in Section V. In addition, several specific elements of the Master Plan were identified as potential areas of concern in the pre-consultation process with government agencies (Section II(3)). These potential impacts and mitigative solutions have been discussed at greater length in Section IV(2).

II. BACKGROUND INFORMATION

(1) Origin of the Project

The City Council of the City of Hamilton established a Waterfront Planning Committee on February 14, 1984. The Waterfront Planning Committee developed terms of reference for the preparation of a Master Development Plan for the City's waterfront. The contract to prepare this Master Plan was awarded to Coombes/Kirkland/ Berridge Inc.

The consultants worked closely with the Waterfront Planning Committee and the public (see Section II(2)) to produce three alternative scenarios for the development of the waterfront. Further public input was solicited to select a final concept design, which is described in the Hamilton Waterfront Master Plan (September, 1985) and summarized in Section III of this application.

The Master Plan was circulated to all the agencies indicated by the Environmental Assessment Branch of the Ministry of the Environment (see Section II(3)). The comments received from these groups were used as the basis for environmental impact studies on various aspects of the proposed development. These impact studies are included as appendices to this document. The conclusions and highlights of the impact studies are discussed below.

(2) Public Consultation Process

Efforts to involve and inform the public throughout the various stages of the development of the Hamilton Waterfront Master Plan have been an integral part of the entire process from the outset.

City Council established a Waterfront Planning Committee at its meeting held February 14, 1984. Six citizens were appointed from the public, representing a cross section of the community, with a requirement that two citizen members be from the immediate waterfront neighbourhood. Technical staff included representatives of various Civic Departments and senior representatives from the Hamilton Region Conservation Authority, the Hamilton Harbour Commission and the Local Architectural Conservation & Advisory Committee (L.A.C.A.C.). One of the main tasks of this committee was to develop a Proposal Call and Terms of Reference for the preparation of a Master Development Plan for the City's waterfront project.

One of the requirements of the Terms of Reference was that the consultants selected develop a comprehensive citizen participation program that ensured the broadest possible public participation in the project. The firm selected to develop the plan, Coombes/ Kirkland/Berridge Inc., worked closely with the Waterfront Committee and staff to develop a unique and successful program both to inform and to encourage input from the public in the development of the plan.

Two major workshops were held throughout the process. The initial one, held over a four-day weekend, was intended to solicit ideas from various interest and community groups and individuals. Both staff and consultants met with several leaders of the community in the days before the workshop to discuss proposals and suggestions and generally introduce the concept of development in the West Harbour to the citizens of Hamilton. A comprehensive list of groups and individuals was compiled and a flyer was sent out informing them of the upcoming dates and inviting participation (Appendix 1).

The local media was instrumental in assisting in informing the public of plans to develop the waterfront. Copies of selected articles from the Hamilton Spectator are attached in Appendix 1.

Throughout the summer of 1985, three Alternatives to Development evolved as a result of the first workshop and ongoing work with the Waterfront Committee and the consultants. A second workshop was held to explain the three alternatives. A public meeting was held in the North End neighbourhood (the neighbourhood adjacent to the Waterfront Project), on Thursday, July 25. The consultants presented the three alternatives and fielded questions and comments from the audience. The following Monday, July 29, a

public meeting was held at the Hamilton City Hall Council Chambers, hosted by the Mayor, Aldermen and Citizens Committee. Members of the public were invited to attend and the local cable TV network televised the meeting live to area residents. A telephone hook-up was arranged so that viewers at home could phone in comments and questions to staff and the consultants regarding the presentation of the plans. Estimates from the cable company indicated that between 20,000 and 30,000 viewers tuned in at one time or another to watch the presentation.

Following the meetings on the presentation of the three alternatives, continued work focused on combining the comments received from the public and the Citizens Committee, in order to develop a single workable alternative that ultimately combined elements of all three. On September 4, 1985, the final plan for the waterfront was unveiled at a well attended public meeting of the Parks & Recreation Committee. In addition to the plan, a large-scale model of the proposal was also available for viewing. The plan was recommended by the Parks & Recreation Committee to Hamilton City Council and eventually received endorsement by Council on October 29, 1985.

The waterfront model is on permanent display at City Hall and a continuing effort is being made by staff to maintain a high level of public awareness for the project. Presentations of the plan have been made at local schools, at a special meeting in Hamilton of the Central Ontario Chapter of the Canadian Institute of Planners and local community groups and organizations. Copies of the plan are available through the local library, McMaster University, the University of Toronto and Toronto's Municipal Reference Library. The public may also borrow or purchase copies from the City of Hamilton. Promotion of the plan has also been carried in the publication "Waterfront World" and several copies have consequently been sold.

The Implementation Committee, established by Council (February 1986), is comprised of elected officials, citizens and staff to (1) review and refine the plan, (2) prepare terms of reference for the management and implementation of the plan, and (3) determine a citizen participation program for the implementation process.

Several opportunities for voicing support or opposition to the plan remain. Specific objections from the public can be heard at planning junctures during the implementation process, which may include:

(a) Public meeting of the Environmental Assessment Advisory Committee

(b) Public meeting of the Planning and Development Committee regarding traffic plans for the North End

(c) Public meeting of the Transportation and Environment Committee regarding traffic plans for the North End.

(3) Pre-consultation with Government Agencies

In addition to the intensive public participation in the Master Plan development, the completed Master Plan was submitted to the Environmental Assessment Branch of the Ministry of the Environment. At their suggestion, copies were circulated to all the governmental departments and agencies which might have an interest in the plan. A summary of their concerns was prepared and is included in Appendix 2, which also contains a list of all government agencies contacted during this process. Where serious concerns were expressed, the consultants met with the respective Ministries to discuss concerns and, in conjunction with them, alternative ways of implementing the spirit of the Master Plan were developed. Minor concerns have been noted and where appropriate mitigative measures are provided to overcome those problems.

In addition, prior to implementation of the Master Plan, once the environmental assessment requirements have been satisfied, there are numerous permits and approvals that are required regarding specific safety and environmental issues. These include but are not limited to:

Environmental Protection Act (Ontario):

Section 45: Approval from the MOE to use a site where waste has been deposited within the last 25 years.

Section 27: Certification by the MOE of the waste management system employed during dredging projects, and approval of the former Lax Property as a waste disposal site to receive the dredged spoils (may or may not require a public hearing: Sections 30 and 32).

Lakes & Rivers Improvement Act (Ontario):

Approval by the MNR for lake side alterations. Would require the more detailed engineering drawings and perhaps an inspection by their personnel.

Water Resources Act (Ontario):

Section 20: Permit to take water during hydraulic dredging projects.

Section 24: Approval for an industrial sewage works for dredging projects.

Fisheries Act (Federal):

To ensure that no detrimental effect to fishes, or their habitat will occur due to development. No approval or certificate required, just compliance.

Navigable Waters Act (Federal):

Permit issued by the Federal Department of Transport for dredging operations.

Conservation Authority:

Permit for Cut and Fill Operations.

It should be noted that the Master Plan is in accordance with both the existing zoning for light industrial use and with proposed future zoning for planned development. The proposed future zoning has not yet been approved by the Ontario Municipal Board.

Further negotiations are required with the Hamilton Harbour Commission regarding both the rezoning and permission to construct the most northerly perimeter islands of the Plan and shoreline improvements at Pier 4 on Harbour Commission waterlots. The remainder of the waterlots are already owned by the City.

III. PROPOSED UNDERTAKING

The Hamilton Waterfront Master Plan (September, 1985) should be consulted for a detailed description of the undertaking and Appendix 9 for the revised economic impacts. A Site Plan showing the proposed development is provided in Figure 1. Only Areas A to D are being considered as the proposed undertaking. Development of Harbour Commission lands as outlined in the Master Plan (Area E) is not being considered at this time. The undertaking is independent of their implementation.

The Master Plan for the Hamilton Waterfront involves transforming the central waterfront into an important new recreational amenity for Hamiltonians and for the region. The development of a new waterfront will increase its accessibility, as well as broaden the economic base of the city. Summaries of the proposed development of each area as delineated in Figure 2 follow.

Figure 1. HAMILTON WATERFRONT
SITE PLAN

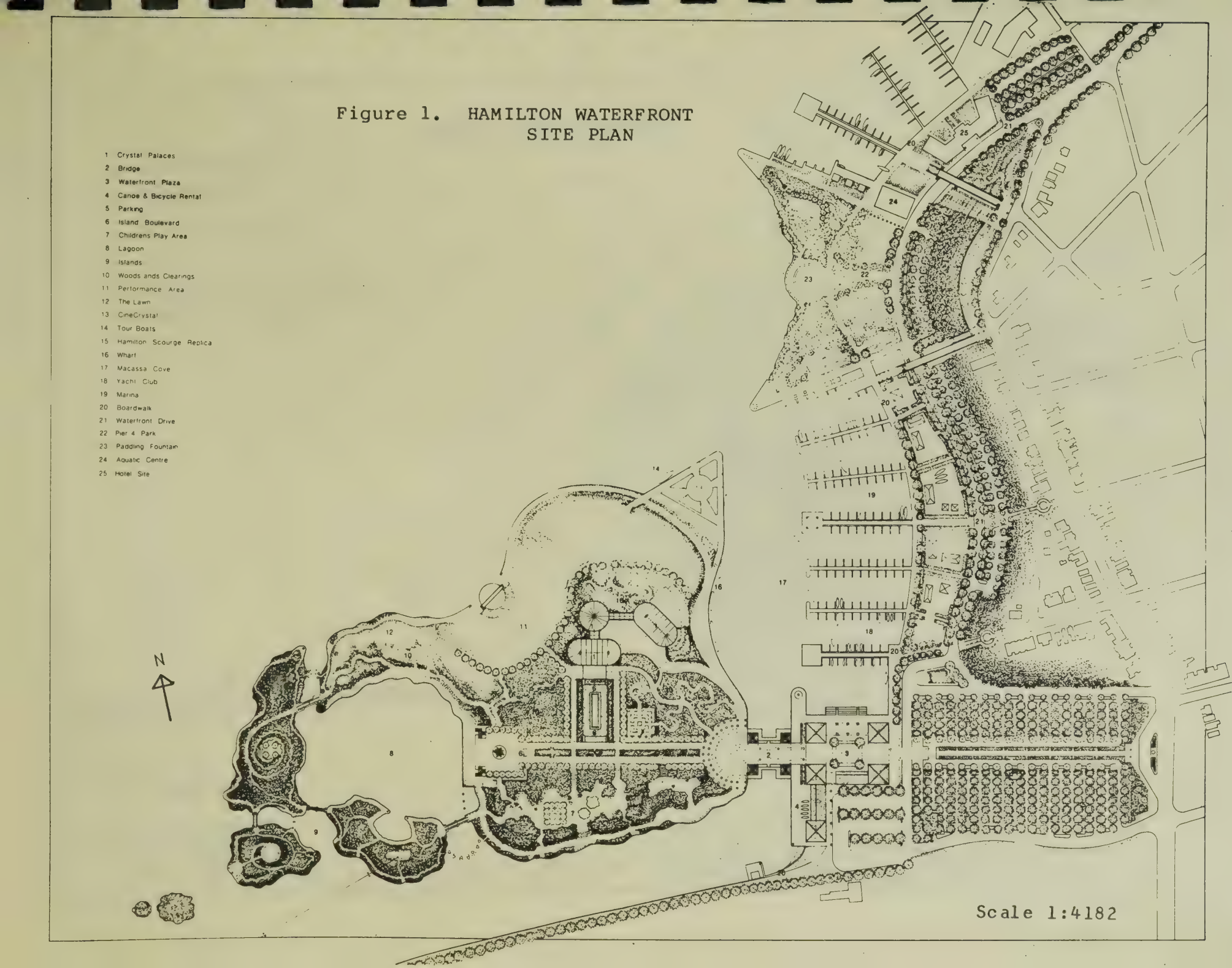
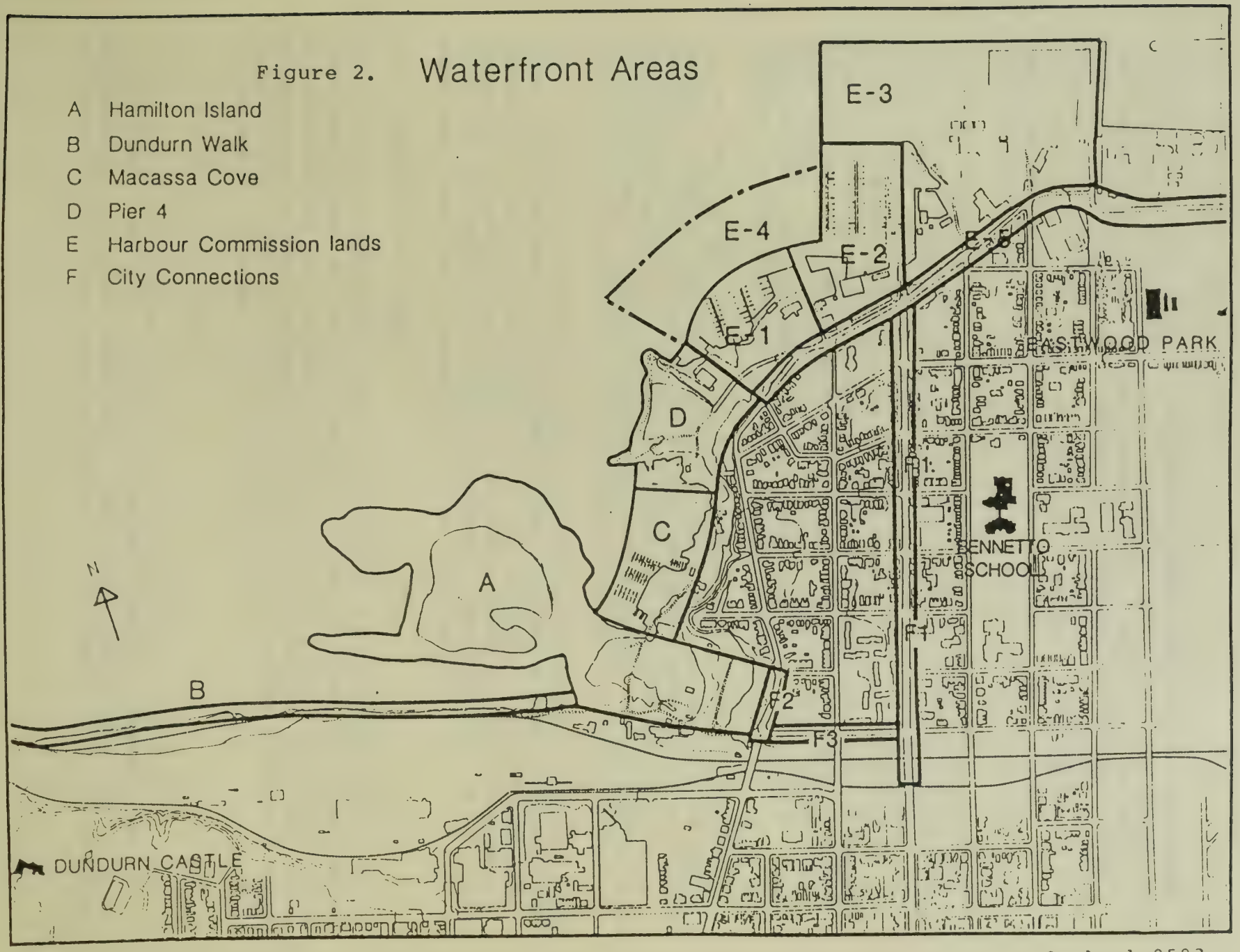


Figure 2. Waterfront Areas

A Hamilton Island
B Dundurn Walk
C Macassa Cove
D Pier 4
E Harbour Commission lands
F City Connections



Scale 1:8583

(1) Hamilton Island (Area A)

The major feature of the plan is to create Hamilton Island from the existing landfill property formerly called the Lax Property. The basic conception of the Island is as a carefully landscaped park garden occupied by a number of different activities. The Crystal Palace which houses flower and botanical displays will be the focal point of Island activities. It will also serve as the administrative centre and house other cultural and craft activities.

Other areas of the Island are transformed into a central boulevard with reflecting ponds and fountains, a children's play area and treed areas. The north shore of the Island is sloped towards the water's edge and formed into an amphitheatre with a floating stage. The northeastern tip of the Island is the location of a deck housing the Cine Crystal, an Imax/Omnimax theatre, a replica of the Hamilton and/or Scourge ships, and a docking facility for tour boats. The mainland side of the bridge to the Island is planned as a waterfront plaza to house activites such as a farmers' market, antique shows and boat shows.

An enclosed artificial lake, filled from the municipal water supply, will be developed from the open bay now present in the property. The artificial lake will include a separate, curtained, chlorinated section for safe swimming, as well as an area for pedal boating. Please consult Section IV(2)(d) and Appendix 6 as descriptions presented in the Master Plan have been changed.

The Island is conceived as a year-round recreational facility with free public access at all times other than on exceptional special occasions. Parking facilities for 573 vehicles are provided in three lots east of the bridge. Areas for shuttle and tour bus drop-off and parking are also provided. The Island, and all other sections, would be accessible to the handicapped.

(2) Dundurn Walk (Area B)

An extended waterfront floating boardwalk is proposed to connect Hamilton Island to Dundurn Castle and into Cootes Paradise through the Desjardins Canal. The floating boardwalk will be set slightly offshore to prevent access to the CN yard which it borders. A pedestrian bridge to connect Dundurn Castle to the boardwalk will be necessary to cross the CN Rail tracks.

(3) Macassa Cove (Area C)

This area is dedicated principally to boating and marina activities. The cove will be enlarged from its present size to accommodate a greater number of boat slips and to provide additional space for existing yacht clubs. Mooring slips will be

provided for short-term use by visitors to the waterfront. These facilities will be serviced by the waterfront drive which provides continuous connection to the Island parking lot. Two additional parking lots accommodating 140 vehicles are also provided to serve the middle section of the waterfront.

(4) Pier 4 (Area D)

Pier 4 is designated as a largely passive park area, as a counterpoint to the busy activity to the south. A waterfront drive will continue through the development, providing linkage to the main parking lot. A high berm will be landscaped on the south side of Pier 4 to isolate it from the marina in Macassa Cove.

The Leander Building and Boat Club on the north side of Pier 4 will become an aquatic centre, still housing its present uses but with a greatly expanded utilization of the second floor. The aquatic centre is intended to provide water safety and boating education and become a general centre supporting and promoting water recreation. A parking lot with capacity for 74 vehicles is planned to serve Pier 4 and the Leander aquatic centre.

City Connections

The proposed strategy of the Master Plan is to identify and upgrade certain of the major roads and to establish them as connections between the city and the waterfront. The North End neighbourhood will be isolated, to the extent possible, from any negative impact of traffic generated by the waterfront development. A waterfront drive is proposed as a scenic, two-lane driveway funnelling vehicular access along the waterfront into the parking areas and diverting traffic away from the North End neighbourhood. Parking facilities for 800 vehicles, distributed in Areas A, C and D, will be connected to the waterfront drive to prodice a continuous transportation network.

More detailed discussions of the traffic management plan can be found in Section IV(2)(e). Other connections to the downtown core will be provided by a summer shuttle bus service and perhaps a distinctive waterfront transit service. The water's edge walk along the length of the proposed waterfront development will provide a major link in what should eventually become a complete bicycle, jogging and walking trail around Hamilton Harbour.

Activities and Programs Plan

The Master Plan also suggests a wide and diverse range of activities and programs to be held in the above facilities and the open spaces. Consult the Master Plan for a more detailed description.

IV. DESCRIPTION OF THE ENVIRONMENT AFFECTED

(1) General Description

Figure 1 illustrates the study area considered to be affected by the proposed undertaking. Note that while the Master Plan discusses future options for Harbour Commission property to the north of these areas, the Harbour Commission property is not currently available and is not part of this submission.

Area A is the landfill property formerly known as the Lax Property. Construction was undertaken by the Lax brothers from 1968 to 1972, mainly from earth and rock excavated during the construction of the Claremont Access Road. Some attempt was made to prevent erosion of the property by the use of armour stone on exposed shoreline. A natural successional stage of grasses and shrubs has covered Area A since construction was completed.

No rare or endangered species of aquatic or terrestrial flora and fauna have been identified as permanent or occasional inhabitants of Area A. This is based on government agencies and public groups solicited for opinions and on observations by Booth Aquatic Research personnel at various seasons of the year. Evidence of nesting by common bird species and inhabitation by small mammals was noted, as were small aggregations of waterfowl in the surrounding water. In the spring of 1986, two Canada goose nests and one mute swan nest were observed.

The area has been used in past years by off-road vehicles, the occasional fisherman and people out for a stroll.

Area B is comprised of the immediate water's edge of the land owned and operated by CN Rail. A CN service road separates the rail lines from the water's edge. A Stelco pumping station removes water for industrial purposes at a pumphouse adjacent to the CN yard. A storm sewer outlet empties into the corner of this bay.

Area C consists of land and waterlots owned by the City of Hamilton and leased to the Macassa Bay Yacht Club and the McDonald Yacht Club. Clubhouses, boat storage and work areas occupy the site at present. Docks occupy the water acreage for use by club members. Periodic dredging has been required to keep this bay open to the Harbour and deep enough for boating use.

Area D is known as Pier 4 and is owned by the City of Hamilton, although the waterlots are under the jurisdiction of the

Hamilton Harbour Commission. Its present use is parkland with passive recreational use. Boat launching and picnic facilities have been provided. The Leander Boat Club occupies the north end of Area D on land presently leased from the Hamilton Harbour Commission.

The wide open green space provided by the existing park is used by 15 to 20 pairs of Canada geese and their goslings as a feeding ground. The shoreline is fairly barren and provides no cover for fish habitat. Few aquatic macrophytes grow along the edge.

(2) Specific Issues

(a) Industrial Waste on Hamilton Island

Prior to embarking upon environmental assessment of the impacts of the Master Plan, the City of Hamilton retained Booth Aquatic Research in the fall of 1985 to prepare an environmental management plan for the industrial waste which had been found on the former Lax Property, the site of the proposed Hamilton Island (Area A). Their report is attached in Appendix 3.

The report summarizes data from several sources which delineate the problem of pockets of industrial waste which had been deposited on the former Lax Property. Recommendations are then made for the management of the Property to provide an environment safe for public use.

Industrial waste material, primarily iron oxides of steel mill flue dust, were deposited both on the surface and scattered throughout the site. It was recommended that the surface piles of waste should be removed by a licenced waste disposal facility. This eliminated any chance of erosion of the material into the Harbour or the atmosphere and alleviated public concern.

Groundwater and nearshore water quality were analysed. Results showed that very low levels of the metals associated with the industrial wastes are leaching into the Harbour. This evidence supports the conclusion that at present there is no cause for concern regarding contamination of the Harbour by the Property. It was recommended that groundwater monitoring be continued so that if any problems arose in future, they would be detected early and mitigative measures could be instituted at that time. The recommendations include capping the site with clay fill to reduce percolation from surface precipitation and/or installing a tile drainage system in conjunction with the proposed development.

An underwater visual survey of the perimeter of the site is recommended prior to development to determine whether there are additional deposits of industrial waste (including seepages of

oil) below the water line. These could be dealt with during the dredging of the Property.

The recommended program reduces the potential for contaminated water leaching into the Harbour, eliminates the chance of wind erosion of the surface waste, ensures that users of the site are not exposed to contaminated soil and will provide a conservative, environmentally and socially acceptable approach to dealing with the problem.

In summary, the recommendations included:

(1) Remove surface industrial waste from the Property;

(2) Award a contract for industrial waste disposal to either Philip Enterprises or Tricil Ltd. for a total cost not to exceed $215,300 or $164,00 respectively, based on the discussion in Appendix 3.

(3) Institute a water quality monitoring and inspection program;

(4) If development proceeds, then design drainage systems to minimize percolation of surface water through the site.

On June 24, 1986, the City Council approved the report and accepted its recommendations. Philip Enterprises Inc. was contracted to remove and dispose of the industrial waste. They were chosen over the less expensive proposal from Tricil Ltd. because they were able to commence the operation immediately.

(b) Dredgeate Disposal

The proposed undertaking calls for dredging to occur in the creation of the lagoon and in Macassa Bay. Concern was expressed regarding the disposal of dredgeate which may contain contaminants. Booth Aquatic Research was retained by the City of Hamilton to collect sediment samples from areas of proposed dredging and prepare a plan for their disposal based on the quality of the sediments. A copy of the management plan is attached in Appendix 4.

In summary, we have found that the sediments which require dredging are classified as "non-hazardous waste" according to the MOE (1985). This requires that the dredgeate be confined in a certified waste disposal site. We propose that application be made to have a portion of the south side of the Hamilton Island designated as a waste disposal site and that a certificate for a waste management system be obtained. The dredgeate will be contained on-site while decant water flows through a holding pond into a settling pond to remove suspended solids and finally flows back to the Harbour. Research is cited which shows that the

leachate from the holding site is not expected to contain dissolved contaminants. Specific measures for migitating the environmental impacts of the dredging are outlined below.

(1) A request must be made to the Ministry of the Environment, Regional Director, for a certificate of approval for a waste management system to include the collection, processing and storage of dredged spoils (R.S.O. 1980, C.141,S.27) and to include a waste disposal site on the south site of Hamilton Island. (Similar projects have recently been approved under the Regional Director's signature in Central Region, e.g. Keating Channel: 100,000 m^3 and Whitby: 25,000 m^3 of dredgeate.)

(2) Prior to dredging, permits must be obtained to take water for dredging and for waste treatment in an industrial sewage works under Sections 20 and 24 of the Ontario Water Resources Act.

(3) A permit must be obtained under Section 45 of the Environmental Protection Act before decommissioning the certified waste disposal site (R.S.O. 1980, C.141,S.45.

(4) No significant habitat or species of aquatic flora or fauna has been observed or documented in the areas to be dredged. Small amounts of contaminants may be resuspended but are associated with suspended solids and will not be significantly mobilized by the food chain.

(5) Plumes of turbid water will be prevented from leaving Macassa Cove by a silt curtain installed across the mouth of the cove.

(6) If turbidity of the decant water flowing from the Lagoon into the Harbour, to be measured weekly by the City, lowers the Secchi depth of the Harbour by more than 10%, as per the Ontario Water Management Goals stated by the MOE, then flocculation of the suspended solids using calcium hydroxide should be considered.

(7) Dredging should be limited to 7:00 a.m. to 11:00 p.m. daily to minimize the impact of noise on the local residents.

(8) Dredging should take place in early spring or late fall to minimize interference with the local marina operations.

(c) Noise Impact

Concern was expressed by the Ministry of the Environment regarding the potential for noise generated by the proposed undertaking adversely impacting the nearby residential area. The Regional

Laboratories of the Municipality of Hamilton-Wentworth and Hatch Associates were retained to carry out a noise impact study of the proposed undertaking and suggest mitigative strategies. Their comments have been attached as Appendix 5.

The noise impact of the proposed development has been assessed to be insignificant with the possible exception of the effects of traffic noise on 15 houses situated at the top of the bluff. At peak volumes of 400 cars per hour on the waterfront drive, noise levels generated by the traffic will be approximately double current levels. Careful design, keeping this roadway as close to the bluff as possible, will minimize the noise audible to these residences overlooking the road. Traffic noise impacts on other proposed arteries, such as James Street, are not expected to be significant.

Other potential noise problems are those generated by the amphitheatre, increased boating, fireworks and construction. The amphitheatre will be designed to be out of line of sight from the residences on the bluff and will be oriented in such a manner as to minimize noise reaching the North End neighbourhood. A variety of family programming is intended to take place, which will have a lesser impact than a steady diet of rock concerts might have had. In addition, the sound system will be designed specifically to minimize the long-range impacts of the noise using directional speakers and minimal amplification.

Increased boating activity is proposed for the Macassa Cove marinas. Any boat races that occur, however, will be sailboats as the navigable nature of the Harbour precludes powerboat races. Similarly water skiing, which is optimistically referred to in the Master Plan, will not be permitted.

Fireworks are planned for special occasions at the site. These will not be every weekend. The existing noise bylaws of the City of Hamilton (Appendix 5) adequately regulate fireworks noise and requests for exceptions to the bylaws will be referred to City Council as required.

Construction noise is regulated adequately by the City noise control bylaws. Construction will not be permitted between 11:00 p.m. and 7:00 a.m. Existing truck routes will keep trucks out of residential neighbourhoods.

In summary, there appears to be some concern regarding the impact of traffic noise generated by the proposed waterfront drive and the parking facilities. This impact is limited, however, to about 15 residences located at the top of the bluff. The positive impacts of the proposal on the neighbourhood in general (see Appendix 7) and on the City and Region are deemed to outweigh and make insignificant the impacts that may occur.

(d) Artificial Lake (Proposed Lagoon)

The proposed undertaking outlines the use of an open lagoon as a chlorinated swimming area in the summer and a skating surface in the winter. Concerns were raised by the Ministry of the Environment and the Ministry of Health with regard to the feasibility of being able to adequately treat the water and bottom sediments to render the lagoon suitable for water contact recreation. Booth Aquatic Research and Coombes/Kirkland/Berridge consulted with the concerned departments and reached an acceptable compromise design for an enclosed artificial lake.

Appendix 6 contains the revised recommendations for the design to create an enclosed artificial lake rather than a lagoon. Briefly, the revised design of the artificial lake will screen off a swimming area within the lake while sealing boundaries of the lake to the Harbour at sufficient height to be impervious during seiches and seasonal water fluctuations. The municipal water inflow will be situated within the chlorinated area to create a positive outward water flow from the swimming area to the artificial lake and from there to the Harbour.

Studies conducted by the Ministry of the Environment and the Hamilton Region Conservation Authority have found that similar swimming areas (Valens and Christie) provide suitable water quality for swimming and do not adversely affect the aquatic environment outside the area. The artificial lake will be suitable for paddleboating and fishing, while the chlorinated area behind the curtain will provide a beach and swimming facilities. Stormwater runoff will be intercepted by a tile drainage system to avoid it entering the artificial lake.

During construction of the northern islands required to enclose the artificial lake, care will be taken to build armour stone berms prior to dumping clean fill. This will minimize turbidity due to filling activities.

(e) Traffic Impacts

Three issues were raised when considering the environmental impacts of the altered traffic patterns occasioned by the waterfront development.

i. The parking facilities provided for the development include 800 new spaces, which, according to the Director of Traffic Services, is the equivalent of 3,000 persons. Attendance of more than 3,000 people at any one time would create an overflow demand for parking in the vicinity at the rate of 270 parked cars for every 1,000 people. There are, however, no scheduled events foreseen which would draw significantly

more than 3,000 people at one time. While daily attendance is estimated at about 3,000 people per day, this is spread throughout the day with many less than that expected at any one time. Parking will, however, continue to cause a major impact on the Hamilton waterfront if city-wide occasions such as Canada Day, which may be held at various parts the waterfront from time to time, attract thousands to the waterfront. It is anticipated that the development of the Hamilton Island and its associated parking may help to ease the congestion on the rest of the waterfront.

The impact of events attracting greater numbers of persons to the site will have to be carefully planned to avoid the potential for neighbourhood parking and traffic impact. Several mitigative parking measures are available. First, large alternative on-site areas could be made available on an occasional, temporary or permanent basis for recreational parking. The Hamilton Harbour Commission lands, particularly Centennial Pier, have a very large capacity to accommodate parking. Additional smaller potential parking areas exist along the proposed waterfront drive, depending on the exact planning of the yacht club and marina area.

Significant off-site parking areas exist to the south of the site, across the rail corridor. While walking distances are probably too great for these lots to be utilized for regular recreational use of the waterfront, they are potentially available for large-scale events, in combination with a shuttle bus service. Such a system was employed for the Tall Ships event in 1984.

The potential for impact on the North End neighbourhood could be reduced by local parking and traffic control measures. Permit parking, restructured access, one-way streets and increased patrolling by enforcement officers are all techniques that could be employed on an as-needed basis to reduce traffic and parking impact.

Similarly, the prgram of events for each year should be carefully developed over time to ensure that unacceptably large demands are not created on the neighbourhood traffic and parking system. Arrangements should be made to determine parking demand on the basis of actual events as the waterfront recreational activities develop. The construction phasing of large activity generators, such as the Crystal Palace, the Imax Theatre, the Amphitheatre and the artificial lake, should permit easy monitoring of actual demand. We are not recommending that very large demand generators, such as the Festival & Friends or Canada Day, be held on-site.

It should be noted that the Master Plan refers to 400,000

visits per year and projects this may increase if the project is a success. The 400,000 visits, however, refer to use of each facility, so that one person visiting four facilities is counted four times. This cannot be directly related to the number of cars requiring parking space.

ii. The Master Plan has considered the future integration of a proposed industrial perimeter road abutting the CN tracks to the south of Hamilton Island, which is an approved element and City and regional official plans. No time frame has yet been set for implementation of the proposed perimeter road. It will be a major undertaking, almost certainly requiring an environmental assessment under the Environmental Assessment Act. In the absence of any firm time frame or allocated funds and with the explicit consent of the Waterfront Committee of the City of Hamilton, the Master Plan has taken into account a possible future requirement for this proposed perimeter road. No activities have been planned for the south edge of Area A to allow reconfiguration if necessary. No major impediments have been placed in the route of the proposed alignment. Alternate waterfront parking arrangements to the east of the current location may be required as noted in the Master Plan, if the proposed alignment is implemented. The boardwalk (Area B) is movable and can be relocated as required. However, the existence of a successful waterfront development will certainly be a consideration in final decisions concerning the alignment of the industrial perimeter road.

iii. The continuous waterfront drive, which is proposed to run from Bay Street to Leander Drive and then along Guise Street to the Dock Service Road and ultimately back to Burlington Street, can be of significant benefit to keep traffic volumes away from residential streets. For this reason it is desirable that this roadway have at least two 11 foot lanes and be operated as a park roadway with the minimum allowable speed limit of 20 km/hr. Speed bumps would not be appropriate on this facility. In an effort to maximize pedestrian safety along this roadway, it would be beneficial for the waterfront drive to be located to the east of the parking areas designated for the Macassa Cove and Pier 4 area. This would eliminate the need for pedestrians to cross the waterfront drive going to and from parked vehicles and the waterfront park.

(f) Flora and Fauna

No rare, endangered or significant species of flora or fauna have been recorded as temporary or permanent residents of the study area. Examinations of records of government agencies and observations by Booth Aquatic Research confirmed this conclusion.

Small aggregations of waterfowl, two Canada goose nests and one mute swan nest were observed within the study area, as well as many common passerine nets and a flock of feeding Canada geese. The proposed undertaking is not expected to detrimentally affect those species currently provided with habitat within the study area, although a shift to species more tolerant of human activity might be expected.

The proposed undertaking is perceived as an opportunity to improve the amount of habitat available to many species. Proper grading during dredging and the armouring of the north shore of Hamilton Island will increase the available littoral zone, promoting the growth of aquatic plant species and inhabitation by fish. Algae will take hold on the armour stone, promoting invertebrate colonization which provides food sources for fish. At the present time, natural turbidity in the Harbour prevents excessive algae growth. Decreased loadings to the Harbour in the future may reduce the turbidity and increase growth potential of algae. Excessive algal growth on the armour stone should not be a problem, in light of the positive addition it provides to the ecosystem. Additional fish habitat structures may be incorporated into the design upon consultation with local government agencies and perhaps with participation by local sporting clubs.

Construction activities are not expected to adversely affect any species of fish or wildlife. During the dredging of Macassa Cove, turbidity plumes will be prevented from damaging biota at Cootes Paradise or any other sensitive area by employing a silt screen across the mouth of the Cove.

(g) Services

A tile drainage system is planned to intercept storm water runoff around the proposed artificial lake. This stormwater will be directed into the Harbour. The proposed gravel pedestrian path around the perimeter of the Island will be used to channel stormwater drainage from the rest of Area A into the Harbour. As no stormwater collection currently exists on-site and the shoreline slopes are not protected from erosion, this will be an improvement over existing conditions. An increase in stormwater runoff can be expected when landscaping is complete. This will reduce the percolation of water through the site. Percolation of groundwater had been a concern due to the possible leaching of waste material buried in Area A. Diversion of this water directly to the Harbour is a positive impact of development.

Sanitary sewage will be pumped through a pumping station located on-site into the existing City sanitary sewage system at Simcoe Street. No emergency overflow will be required on site. The extra sewage load will not exceed the capacity of the existing system. Further details are included in Appendix 8.

V. SCREENING CRITERIA: A SUMMARY OF IMPACTS

The following screening criteria recommended by the Environmental Assessment Branch have been applied to determine the environmental significance of the undertaking.

(1) Will the undertaking conflict with the environmental goals, objectives, plans, standards, criteria or guidelines adopted by the Province or the community where the project is to be located?

The approved municipal Official Plan encourages development of Hamilton's waterfront, regarding it as an important urban recreational resource. The Master Plan is in accordance with the Official Plan, the current and proposed zoning of the area and the Secondary Plan for the North End neighbourhood adjacent to the proposed development.

During the preparation of the proposed undertaking, all appropriate goals and objectives adopted by the province and community were reviewed and incorporated into the undertaking. The Waterfront Master Plan conforms to these policies to a remarkable degree. Please see Appendices 1 and 2 for details of government bodies and private groups contacted during the preparation of the Waterfront Master Plan, and Appendix 7 for the comments of the neighbourhood planner.

(2) Will the undertaking have an effect on any unique, rare or endangered species, habitat or physical feature of the environment?

Section IV(1) of this application contains descriptions of the study area affected by the proposed undertaking. Government agencies concerned with environmental resources and public naturalist groups were contacted for any records of unique, rare or endangered species, habitats or physical features occurring within the study area (see Appendix 2). No records of such species or features were found; hence it is not anticipated that the proposed undertaking will affect any unique, rare or endangered species, habitat or physical feature of the environment.

(3) Will the undertaking have effects on adjacent persons or property, or property not associated with the undertaking?

The proposed undertaking takes considerable care to minimize negative impacts on the adjacent neighbourhoods and properties. The following are potential effects of the proposed development:

(a) Privacy

The study area will undoubtedly become more active. Activity has been designed to be focused away from the existing North End neighbourhood to avoid a detrimental effect on privacy. Appendix 7 provides greater detail of the impact on the neighbourhood.

(b) Noise

Increased noise levels may affect a small number of houses overlooking the proposed development. The overall noise impact of the proposed development has been assesed to be insignificant, as outlined in Section IV(2)(c).

Boating activity will increase due to the undertaking, but it is believed that noise levels will not be substantially increased. Only sailboats will compete in boat racing which takes place, as the navigable nature of the Harbour precludes powerboat racing. Waterskiing will not be permitted.

Noise created by the proposed amphitheatre will be minimized by landscaping, sound system orientation and the nature and timing of the programming.

Other activities, such as fireworks, are planned for special, rare occasions and the existing City of Hamilton bylaws adequately regulate such displays. Construction will be limited to the hours between 7:00 a.m. and 11:00 p.m. as prescribed by bylaws, and existing truck routes will minimize the effects on residential neighbourhoods.

The positive impacts of the proposal on the neighbourhood in general and on the City and Region are deemed to outweigh and make insignificant minor impacts of noise which may occur.

(c) Traffic and Parking

Traffic and parking associated with the proposed undertaking will have minimal effects on the surrounding community, other than the minor noise concerns previously addressed. The continuous waterfront drive, proposed to run from Bay Street to Leander Drive, along Guise Street to the Dock Service Road and ultimately back to Burlington Street, will significantly keep traffic away from residential streets. Adequate parking of 800 spaces is expected to handle the requirements of the proposed undertaking.

(4) Does the undertaking necessitate the irreversible commitment of any significant amount of non-renewable resources?

There are no known non-renewable resources in the study area. The majority of the proposed development will occur on a landfill site filled during the last two decades. If any historical artifacts are encountered during construction, the work will stop immediately at that site until the Regional Archaeologist from the Ministry of Citizenship and Culture can examine the site.

(5) Will the undertaking pre-empt the use or potential use of a significant natural resource for any other purposes?

The significance of the site as a natural recreational resource is dependent upon development of some sort. The Master Plan was developed to maximize the benefits the public desired from the site.

(6) Will the undertaking result in a substantial detrimental effect on air or water quality, or on ambient noise levels for adjoining areas?

Air quality is not expected to be significantly affected by the proposed undertaking.

Water quality in the Harbour surrounding the study area and the groundwater within Area A is predicted to improve after implementation of a previous undertaking to remove surface areas of contaminated soils from Area A (see Section IV(2)(a)).

Implementation of the Master Plan will reduce sediment loadings to the Harbour by improving erosion control within the study area. An existing monitoring program (see Appendix 3) for nearshore water quality and groundwater quality will be continued to ensure that no unforeseen detrimental impacts occur.

Dredging activities summarized in Section IV(2)(b) are not expected to significantly adversely affect Harbour waters. Mitigative measures are proposed in the Dredged Spoils Management Plan (Appendix 4) to minimize the minor potential environmental effects of this activity.

The impact of noise as outlined in Section IV(2)(c) is deemed to be insignificant. Traffic, boating, amphitheatre, fireworks and construction activities were all sources identified as producing minimal increases in ambient noise levels, which could be mitigated successfully.

(7) Will the undertaking cause substantial interference with the movement of any resident or migratory fish or wildlife species?

The proposed undertaking will not interfere with the habitat of any species of flora or fauna. No significant use of the study area by species of fish or wildlife have been identified to date. No spawning or staging areas will be disrupted. The creation of Hamilton Island may promote movement of such species. Other proposed alterations to the study area will not interfere with migration or movements of fish or wildlife species.

(8) Will the undertaking establish a precedent or involve a new technology, which is likely to have significant environmental effects now or in the future?

The proposed undertaking does not involve any new technology or set a precedent in any way. Thus environmental effects from these causes are not applicable.

(9) Will the undertaking be a pre-condition to the implementation of another undertaking?

The proposed undertaking, as defined in Section IV(1), represents the complete development scheme presently accepted by the City of Hamilton and is independent of any other undertaking. Future development of Harbour Commission lands, discussed in the Hamilton Waterfront Master Plan, is not under consideration for implementation, nor is the undertaking dependent upon their implementation.

(10) Will the undertaking generate secondary effects (e.g. land development, population growth) likely to significantly affect the environment?

The North End neighbourhood surrounding the study area is already becoming a desirable place to live without the influence of the Master Plan. The proposed undertaking will undoubtedly enhance this image. In the long term, house prices may increase and there may be pressure for more intensive residential development. These changes are perceived by the community and the City of Hamilton to be beneficial and not significantly affect the environment (see Appendix 7 for the neighbourhood planner's comments).

(11) Will the proposed undertaking block views or seriously affect the aesthetic image of the surrounding area?

The study area is situated at the foot of higher bluffs surrounding the Harbour and will not obstruct views of the Harbour. The development of the study area is perceived as enhancing the view and the image of the Harbour as a "people

place". The Harbour will become more accessible and a greater number of people will learn to appreciate the resource at their doorstep.

(12) Will the proposed undertaking substantially change the social structure or demographic characteristics of the surrounding neighbourhood or community?

In the long term, as the image of the waterfront is enhanced, partially by the proposed undertaking and partially by the natural processes of gentrification already occurring, the demographic characteristics of the neighbourhood may change. Average family income and age of families in the community may change as more affluent people desiring proximity to the waterfront displace some of the lower income groups.

This is seen as a natural successional stage tied in with the improvement of the Harbour image, and not as a significant detrimental effect on the present community (see Appendix 7).

(13) Will the proposed undertaking adversely affect human health?

The proposed undertaking will not adversely affect human health. The chlorinated swimming area located within the artificial lake (Section IV(2)(d)) will provide a level of swimming safety not presently available on the Harbour waterfront. This undertaking follows a City program to remove industrial waste from the site. Further landscaping, capping former waste sites and installation of a tile drainage system are all positive steps to ensure public safety. Human health concerns, thus, are perceived as being advantageously affected by this undertaking.

(14) Will the proposed undertaking overtax existing community services or facilities (e.g. transportation, water supply, sanitary and storm sewers, solid waste disposal systems, schools, parks, health care facilities)?

The proposed undertaking, being entirely recreational, is calculated to have minimal effects on community services (Appendix 7). Schools, parks and health care facilities will not be overtaxed by the proposed undertaking. The existing network of sanitary sewage and waterworks facilities are quite capable of handling the increased load (Appendix 8). Transportation routes changes as proposed in Section IV(2)(b) will adequately handle the increase in vehicular traffic.

(15) Will the proposed undertaking be highly controversial?

Extensive efforts to involve and inform the public throughout the various stage of the development of the proposed undertaking have been an integral part of the process (see Section II(2) and Appendix 1). The proposed undertaking has been presented to the public through numerous media and to date has met with a remarkable degree of enthusiasm. Through this process it can be ascertained that the proposed undertaking will not be highly controversial. The revival of this under-used resource is perceived by the public as long overdue. The economic benefits to the City and the region as a whole can only be seen in a positive light.

Pre-consultation with government agencies has led us to believe that all their concerns can be satisfactorily dealt with. The summary of government concerns in Appendix 2 shows that no outstanding controversial issues were raised during the pre-consultation process.

VI. CONCLUSIONS

In conclusion, it is our opinion that the screening criteria have been adequately examined and in each case the criterion has been satisfactorily met. The net environmental impact of the undertaking proposed in the Master Plan is to:

(1) improve the natural physical and biological aspects of the site by reducing existing physical problems, such as erosion, and enhancing habitat for birds, fish and man;

(2) improve the economy of the area by creating jobs and stimulating the local and regional economies by making the waterfront an enticing place to visit;

(3) enhance the process of gentrification of the local neighbourhood which is currently under way and encourage a neighbourhood pride by reminding people that Hamilton's waterfront is a beautiful place to live.

APPLICATION FOR EXEMPTION

UNDER SECTION 29 OF

THE ENVIRONMENTAL ASSESSMENT ACT

FOR

PROPOSED HAMILTON WATERFRONT MASTER PLAN

BY

THE CORPORATION OF THE CITY OF HAMILTON

APPENDICES

Prepared by

Booth Aquatic Research Group Inc.

July, 1986

APPENDIX 1

PUBLIC PARTICIPATION

Flyers Advertising Waterfront Workshop

Master Mailing List

List of Citizens' Letters

Examples of Media Articles

The Hamilton Waterfront Sub-Committee's

WATERFRONT WORKSHOP

Sailors

sketches

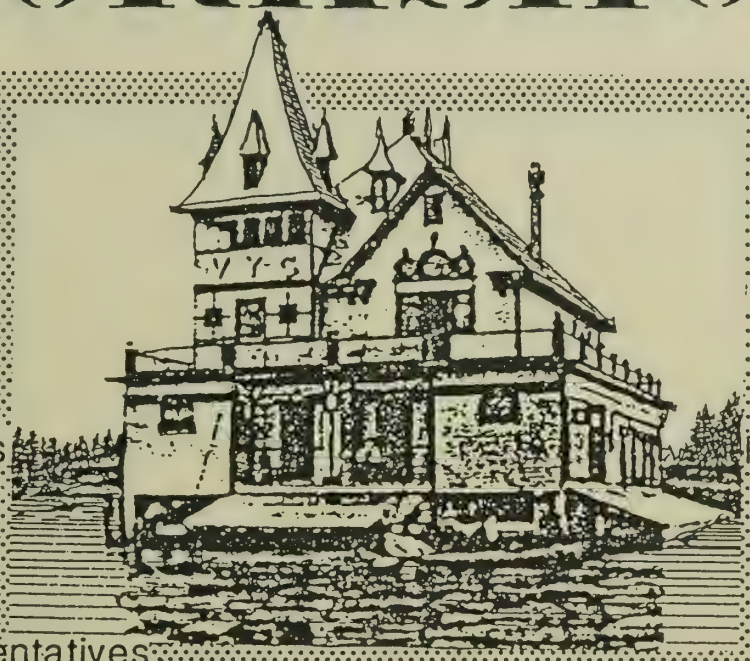
Comments

Discussions

Conservationists

Yachters

Elected Representatives



Boaters

Ideas

Flower Lovers

Slide Shows

Recreationists

Businessmen

Picnicers

APRIL 12 thru 15
at the

Convention Centre

★ Sat. April 13th - 9 to 5 - all day ★

Hosted by Mayor Bob Morrow

presentations public discussions , refreshments, and recital

★ Mon. Night April 15th - 7 to 9 p.m. ★

Come and dream about the future and possibilities for the Waterfront

Everyone Welcome!

for information call 526-4604

The Hamilton Waterfront Sub-Committee's

WATERFRONT ANOTHER WORKSHOP

Sailors

sketches

Comments

Discussions

Conservationists

Yachters

Elected Representatives

Boaters

Ideas

Flower Lovers

Slide Shows

Recreationists

Businessmen

Picnicers

BENNETTO Senior Public School AUDITORIUM

444 Hughson St.North

★ 7:30 p.m. THURS. JULY 25th ★

Hamilton City Hall COUNCIL CHAMBER

71 Main St. West

★ 8:00 p.m. MON. JULY 29th ★

Come and dream about the future and possibilities for the Waterfront

Everyone Welcome!

for information call 526-4604

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Board of Education,
Ray Mulholland - Chairman
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Chedoke-McMaster Hospital
Dr. Dent - Professor & Chairman
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Crystal Palace Committee,
Susan Reeder - Secretary,
City Clerk's Department

Crystal Palace Committee,
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Durand Neighbourhood
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Marilyn Soules - Curator

General Hospital,
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L8P 1L4

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Danute Kudaba
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L8R 1J4

Hamilton Foundation,
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Hamilton-Went. Creative Arts
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Separate School Board
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Council
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Les King, Mark Sproule-Jones
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Dr. Peter George,
Michael Dear, Ruth Fincher

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Social Planning & Research
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Judy Orr, Director
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L8R 2L3

Acadia Travel
Phillip Viana
233 James St.N.,
Hamilton, Ont. L8R 2L2

Christpher's Cameo Restaurant
Chris Tipulou
6Ø James St.N.
Hamilton, OInt. L8R 2K1

Corsini Supermarket
Ron Corsini
34Ø James St.N.
Hamilton, Ont. L8L 1H2

Dino Deli Burgers
Peter Rozakif
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Echo Reprographics
Paul Somers
1Ø Mullberry St.
Hamilton, Ont. L8R 1A1

Fashion Taylor's Supplies
Leslie Toth
28Ø James St.N.
Hamilton, Ont. L8R 2L3

H. Williams Jewellers
Ralph Travis
138 James St.N.
Hamilton, Ont. L8R 2K7

Irving's Famous Clothes Ltd.
Sid Leon
62 James St.N.
Hamilton, Ont. L8R 2K5

Jerry's Men's Shop
Jerry Sherman
155 James St.N.
Hamilton, Ont. L8R 2K3

J. & J. Pro Hardware
Jeanette Morgan
2Ø5 James St.N.
Hamilton, Ont. L8R 2L2

La Triestini Shoes
Mr. & Mrs. Piccini
255 James St.N.,
Hamilton, Ont. L8R 2L2

McKay & Co. Florist
Marie Robbins
238 James St.N.
Hamilton, Ont. L8R 2L3

Mike's Dry Cleaning
Ron Boyko
176 James St.N.
Hamilton, Ont. L8R 2L1

Miller's Shoe Store
Mr. Miller
14Ø James St.N.
Hamilton, Ont. L8R 2K7

Mingel's Cafe
Fern Julius
2Ø1 James St. N.
Hamilton, Ont. L8R 2L2

Orellia Dress Shop
James & Elizebeth Rehor
219 James St.N.
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Petteplace Gallery
Gail & Allan Petteplace
27 King William St.
Hamilton, Ont. L8R 1A1

Rapid Blue Print
Don Wilson
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Hamilton, Ontario L8R 1A1

Ricca's Furniture Ltd.
Guido & Guy Ricca
228 James St.N.
Hamilton, Ont. L8R 2L3

Robinex Capital Corp.
Doug M. Robbins
238 1/2 James St.N.
Hamilton, Ont. L8R 2L3

Tino's Hair Design
Tino Gironi
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Canadian Imperial Bank of Commerce
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Dofasco
Frank Sherman - Chairman 544-3761
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Hamilton, Ont. L8H 3L2

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Robert Cordingly
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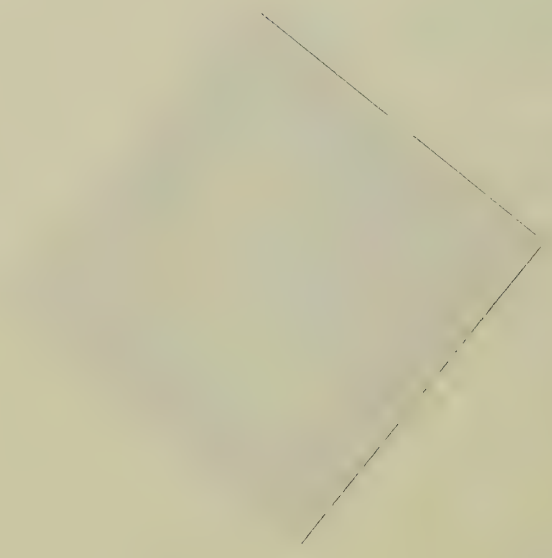
Hamilton, Ont. L8N 3J1 Firestone Canada - Robert Stanbury

Hamilton Harbour Commission
Charles Towsley, Port Planner
605 James Street North,
Hamilton, Ont. L8L 1K1



Business Interests - Cont'd.

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605 James St.N.
Hamilton, Ont. L8L 1K1

International Harvester & J.I. Case
Jerome K. Green, President & C..E.O
208 Hillyard St.E.
Hamilton, Ont. L8L 6B6

International Harvester
Jim Schumaker, Human Resources Manager
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Hamilton, Ont. L8N 3P9

Ideal Furniture,
Marvin Wasserman
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Hamilton, Ont. L8N 1B5

J/V/F Corporation -16th Century Productions
Fred Corrigan
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Minnetonka Ma.
U.S.A. 55343

Laidlaw Transport
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Lordly Jones Co. Ltd. - Norma Sonnenburg
51 John St.S.
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Alec Murray - President
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National Trust
Brian Fortune - Branch Manager
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Pat Realty
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Ben Ciprietti, Chairman
Jayne Tollefsen, Secretary
City Hall

Culture & Recreation Dept.
Vicki Nash - Bicycle Paths
City hall

Chief Administrative Officer,
Lou Sage,

Heritage Advisory Committee
Sid Leon - Chairman
City Hall

L.A.C.A.C. & Hamilton Historical Board,
Lynn Dale, Secretary, City Hall

Planning Department,
David Godley, Program Director
City Hall

Management Team,
Keith Avery, City Hall

Traffic Department,
Ted Gill, City Hall

Government Agencies:

M.P.'s

Sheila Copps (Hamilton East)
1217 Main St.E.
Hamilton, Ont.
L8K 1A3 547-7040

Peter Peterson (Hamilton West)
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Hamilton, Ont.
L8P 1J4 529-4776

Ian Deans (Hamilton Mountain)
688 Queensdale Avenue E.
Hamilton, Ont.
L8V 1M1 389-1934

Geoff Scott (Hamilton-Wentworth)
6 Sydenham Street
Dundas, Ont.
L9G 2B9 648-6544

W.J. Kempling,(Burlington)
Upper Canada Place
460 Brant Street
Burlington, Ont.
L7R 4B6 632-0196

Shirley Martin (Lincoln)
45 King Street E. Unit 9
P.O. Box 9070
Stoney Creek, Ont.
L8G 1K1 664-2356

M.P.P.'s

Bob MacKenzie (Hamilton East)
1345 Main Street E.
Hamilton, Ont.
L8K 1B8 544-9644

Richard Allen (Hamilton West)
278 King St.W.
Hamilton, Ont.
L8P 1B2 527-6411

Lily Munro (Hamilton Centre)
899 Main St.E.
Hamilton, Ont.
L8M 1M4 545-6411

Brian Charlton (Hamilton Mountain)
688 Queensdale Ave.E.
Hamilton, Ont.
L8V 1M1 388-9734

Gordon Dean (Wentworth)
6 King St.E.(up)
Stoney Creek, Ont.
L8G 1J8 662-4442

Chris Ward (Wentworth North)
4 Cross Street,
Dundas, Ont.
L9H 2R4 627-5955

Agencies:

Canada Centre for Inland Waters
867 Lakeshore Road
Box 5050
Burlington, Ont.
L7R 4A6 637-4303

D.S. Chamut-General Director
Ont. Region
3050 Harvester Road
Burlington, Ont.
L7N 3J1 637-4673

Ministry of Environment
M. Munro, Vice-Chairman
Environmental Assessment,
1 St. Clair Ave. 5th Floor,
Toronto, Ont. M4V 1K6
965-2531

Dept. of Fisheries & Ocean
Vic Cairns
Burlington, Ont.

Ministry of Environment,
Ray Stewart
P.O. Box 2112,
119 King St.W.
Hamilton, Ont. L8N 3Z9

Local Town & Cities

Ancaster, Town of
Mayor: Bob Wade
R. Morrow - Co-ordinator, Eng.
300 Wilson St.E.
Ancaster, Ont.
L9G 2B9 648-4401

Dundas, Town of
Mayor: Joe Bennett
Rob Gerrie, C.A.O.
60 Main St.
Dundas, Ont.
L9H 2P8 628-6327

Glanbrook, Town of
Craig Swizter, Clerk
Box 130,
Mt. Hope, Ont.
L0R 1W0 679-4121

Burlington, City of
Mayor: R.L. Bird
Mike Boggs, C.A.O. (335-7608)
426 Brant St.
Burlington, Ont.
L7R 3Z6 335-7777

Flamborough, Town of
Mayor: Chris Ward
Gerry Taylor - C.A.O.
163 Dundas St.E. P.O. Box 50
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Region:

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Rosemary Campbell, Reg. Planning
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Don Cole, Economic Development
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Reg. Mun. of Ham-Went.
Robert Daly, Reg. Mgr.
C.M.r. Governmental &
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Toronto, Ont. M5V 2X4

Reg. Mun. Ham-Went.
Saad Ghanem, Manager, Business
Development, E.D.D.
119 King St.W.
Hamilton, Ont.
L8P 4T9

Regional Mun. Ham-Went.
Chairman -
119 King St.W.
Hamilton, Ont.
L8P 4T9

Reg. Mun. Ham-Went.
Heinz Schweinbenz, Director,
Transportation,
119 King St.W.,
Hamilton, Ont. L8P 4T9

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Boy Scouts of Canada
John Galloway,c/o Wm.Tidball
Barrister & Solicitor
105 Main St.E.,
Hamilton, Ont. L8N 1G6

Bruce Trail Association
1 Homestead Ave.,
Dundas, Ont.
L9H 5Y6

Dofasco Angling Club
Bob Baily
100 First StreetN.
Stoney Creek, Ont.
L8G 1Y4

Federation of Ontario Naturalists
Mike Singleton
Moatfield Park, 355 Lesmill Rd.
Don Mills, Ont.
M3B 2W8

Fly Fisherman's Club
Issac Walton
566 Turner Dr.
Burlington, Ont.L7L 2W7

Firestone Angling Club
Russ Holmes
1579 Burlington St.E.
Hamilton, Ont. L8N 3J1

Goodtime Fishing & Hunting
Conservers Club,
Tom Spencer
52 Bridlewood Drive
Dundas,Ont. L9H 6H4

Hamilton Automobile Club
Art Lomax
393 Main Street E.
Hamilton, Ont.
L8N 3T7

Hamilton Naturalists Club
Norm Ralston
39 Sunninghill Ave.
Hamilton,. Ont. L8T 1B3

Hamilton Yacht Club
John Broe - Commander
MacNab Street N.
Hamilton, Ont. L8L 1H1

Leander Boat Club
Jim Morreales
206 Main St.W.
Hamilton, Ontario L8P 1J3

Macassa Bay Yacht Club
Cliff Morris, Secretaryh
P.O.Box 78, Sta. 'B'
Hamilton, Ont. L8L 1H1

New Horizons Sailing Club
Rich Gane
Box 5126
Hamilton, Ont. L8S 4L3

Ontario Steelhead Salmon Fishermen
Mr. Jackson
644 Empress Crescent
Hamilton, Ont. L7L 5E8

West Leander Boat Club
Nancy Taylor
47 Cameron Ave.N.
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'Y' Sailing Club
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247 Herkimer St.
Hamilton, Ont. L8P 2H8

Individuals

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Hamilton, Ont. L8P 1B2

Allick. Breau HYL

Borch, Joe
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Hamilton, Ont.

Christ's Church Cathedral
Rev. J. Fricker
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Hamilton, Ont. L8R 2L3

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P.O. Box 30,. Sta. 'A'
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Finlay, Bob Kathy Renwald
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Gage, George - Leander Boat Club

Gudinskas, A

Gunbul, Ada

Hales, Jeff
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Hamilton, Ont. L8E 1G8

Hamel, Don
Bay St.N.
Hamilton, Ont.

Hartnell, Bill - Garden Clinic
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Hill, Nick, Architect
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London, Ont. N6A 3W2

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Hamilton, Ont.

Jontzi, Robert & Joyce
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Hamilton, Ont. L8L 7A9

Kablau, Ernie - E.K. Boat Service
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Hamilton, Ont. L8L 6B9

Kippen,J.M.
141 South Bend Rd.E.
Hamilton, Ont.

Lewis, Daisy
282 Sherman Ave.S.
Hamilton, Ont.

MacDonald, Sandy - Scott MacDonald Marine,
Simcoe, St.W. P.O. Boox 184, Sta.'B'
Hamilton, Ont. L8L 7V7

MacKenzie, Bob
1345 Main St.E.
Hamilton, Ont. L8K 1B8

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436 Queen St.S.
Hamilton, Ont. L8P 3T9

O'Hagon, Peter

O'Wagner, Peterk

Patterson, Doug, Leander Boat Club

Pittis, Anne
360 Herkimer St.
Hamilton, Ont. L8P 2J1

Power, Sarah (now Betty Baker)
Niagara Peninsula Homes
485 John St.N.
Hamilton, Ont.

Sedes, K

Smithhurst, Robert - M.B.Y.C.
43 Macauley St.W.
Hamilton, Ontario

Sonnenberg, Norma
283 Charlton Ave.E.,
Hamilton, Ont. L8P 2E4

Thompson, Wendy
76 Burlington St.W.
Hamilton, Ont. L8L 1G8

Wyharfg Suk
182 Darlington Dr.
Hamilton, Ontario

Zuker, I.
110 King St.W.
Hamilton, Ont. L8P 4S6

April 12-25th,1985 Waterfront Workshop

Pre-Workshop "One-On-One" Meetings

1. B. Vanderbrug and J. Coates,
   Hamilton Region Conservation Authority

2. The Crystal Palace Planning Committee

3. Miss A. Schimmel, Director,
   Culture & Recreation

4. Ms. N. Chapple,
   L.A.C.A.C.

5. Mr. R. Nutley, Director,
   Parks Division, Public Works Dept.

6. Mr. Dennis Carson,
   Executive Asst. to the Mayor

7.. Mr. V. Abraham, Director,
   Local Planning

8. The Bay Area Technical Advisory Committee

9. Hamilton Harbour Commission

10. S. Lehnert,
    Committee Member

11. Mr. D. Granger,
    Committee Member

12. Ms. G. Simmons,
    Committee Member

13. Ms. Maggie Fischbuch,
    Committee Member

14. Allen Paterson, Director,
    Royal Botanical Gardens

15. Central Area Planning Implementation Committee

16. Local Architectural Conservation Advisory Committee

17. Canadian National Railway

18 Hamilton Fire Department

19. City of Hamilton Department Heads and Deputies
    Management Team

20. Mr. Ben Ciprietti, DOFASCO

21. Mr. Barry Lord, Director,
Hamilton/Scourge Project

22. Mr. Boris Brott, Conductor,
Hamilton Philharmonic Orchestra

23. Community Development Advisory Committee,
Social Planning and Research Council

PRIVATE CITIZENS AND ORGANISATIONS
WHO FORWARDED LETTERS DURING THE CONSULTATION PROCESS

Name	# of Letters	Address
Mr. Bill Powell	1	
Ms. Gil Simmons	2	449 Bay Street North, Hamilton
Hamilton Yacht Club	1	
E.T.F. Munro	1	82 Ferrie Street West, Hamilton
Conserver Society of Hamilton & District Inc.	1	
Rev. S. Duncan Fryfogel	1	35 Ferrie Street West, Hamilton
Edward T. Novak	1	24 Woods Street West, Hamilton
Norma Sonnenberg	1	
Leander Boat Club	1	
P. O'Hagen	1	968 Concession Street, Hamilton
Macassa Bay Yacht Club	2	
Kathy Renwald	1	Resident of Bay Street North
Unitarian House	1	268 Aberdeen Avenue, Hamilton
Larry Pogue	2	
Mr. J. Broe	1	106 Delmar Drive, Hamilton
James Turnbull	1	455 Bay Street North, Hamilton

SPEC.

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A place for people

Back to the bay

The momentum continues to build toward the long-awaited transformation of Hamilton Harbor into a place for people. The four-day Waterfront Workshop, sponsored by the city, generated a lot of ideas from citizens and brought fresh evidence of a renaissance in the water itself.

Hamilton's west harbor has now been deemed swimmable by an official from the Ontario ministry of the environment. Even its pike are edible, the workshop was told. And a federal biologist says clams are being found in the harbor for the first time in 20 years.

All this good news coincides with the concerted local effort to get waterfront development off the ground. Galled by the headaches and heartaches that plagued the revamping of Gore Park, the city wisely chose to involve the populace in the early stages of waterfront planning.

Meanwhile, a team of consultants hired by the city — the same consultants who developed Toronto's Harbourfront plan — say Hamilton's is the only waterfront they have worked on that is "naturally beautiful."

As important as the clearly evident potential of the waterfront is the need for a change in attitude about where people can fit on the shores of the bay. Bob Chrystian of the Hamilton Conservation Authority is right when he says the city "can't afford to just put up picnic tables."

This area's passive recreational needs are currently well-served by Cootes Paradise and the Royal Botanical Gardens. Hamilton's west harbor — especially the recently-acquired Lax land — needs an active development strategy that eventually will draw people to the waterfront for shopping and entertainment as well as sightseeing.

The key at this point in the development process is enthusiasm. The consultants call the west harbor "Hamilton's best-kept secret". In many ways over the years, it's a secret the city has kept from itself.

A good part of the four-day workshop's purpose was to convince local citizens that the dream of bringing people back to the waterfront is a realistic one.

At this stage in the reclamation of what was once seen as a no man's land, there's no need to argue the desirability of bringing it back to life.

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Thinking it through

Harbor land's future

Hamiltonians are beginning to grasp the exciting potential for expanded recreational use of the waterfront. Approximately 100 people took the time this week to call a cable television program to outline their views on the attractive proposals for the harbor that have been drawn up by consultants, while other citizens voiced their opinions to the waterfront park committee and interested city councillors at city hall.

The more the citizens of Hamilton let council know how they feel about the harbor, the better the final plan will be. Although the consultants, Coombes Kirkland and Berridge, have done an impressive job in presenting three options to develop this precious Hamilton resource, the various alternatives must be considered carefully by the public because they differ fairly substantially in philosophy and cost.

The results of this week's informal survey indicated the community may well be divided on whether it prefers a relatively passive gardens type project with lots of pleasant landscaping, or a more active development with money-making tourist attractions and commercial activity.

The Waterfront Gardens proposal offers the appeal of keeping the Lax waterfront property in a natural setting, but is unlikely to generate a great deal of economic activity. In comparison, the Hamilton Island, and the even more intensive Harbourplace Hamilton proposals, would bring more people to the waterfront by providing attractions such as a cinisphere, a ship replica, and possibly a children's village and an amphitheatre. But the Harbourplace Hamilton proposal in particular would require a lot of parking, could generate considerable traffic and noise, and may involve paid admissions which aren't especially desirable.

The decision as to which route to go is a difficult one. It shouldn't be rushed along without obtaining as much public participation as possible. Given the mistakes this council has made in attempting projects such as Gore Park redevelopment without enough forethought, it's essential that the same mistakes are not repeated on the waterfront.

Many people at this week's session suggested council move cautiously before settling on a preferred course of action. It's questionable if the present timetable, in which a final proposal could come before council as early as October, allows enough time to fully gauge public sentiment. And if anything has been learned from Gore Park, it's that public support is a prerequisite for whatever changes council undertakes on the waterfront.

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Hamilton's waterfront

An exciting plan

Hamilton city council's waterfront advisory sub-committee appears to have settled on a composite of the three waterfront development plans drawn up by a Toronto consulting firm. The new package amounts to an exciting vision of a people-oriented place on the bay.

To its credit, the sub-committee has scheduled a public meeting for Sept. 19 for more opinions on the plan before making a formal recommendation to council.

As it stands, the composite plan takes into account the need for a variety of structured attractions to give the bayshore a true community focus, while highlighting its natural attributes.

A waterfront boulevard, wooded area, gardens, bicycle and foot paths, an amphitheatre, children's playground, year-round lagoon, restaurants and cafes — these represent the necessary diversity of facilities for a project of this magnitude and importance to the city.

Linking the Hamilton Island concept to Cootes Paradise via a waterfront pathway sounds like the ideal means to integrate the new development with the city's existing recreational facilities. But tentative plans for a floating boardwalk and bridge to Dundurn Castle, as well as a waterfront plaza for flea markets, don't strike us as ideas that are suitable to — or even consistent with — the overall philosophy behind the development.

At an estimated price tag of as much as $30 million, Hamiltonians expect a classy, cohesive development that gives citizens a multitude of reasons to visit the waterfront, while preserving the natural assets that have always made this part of the city such a valuable, but previously untapped, resource.

Council appears to have zeroed in on just such a plan. With a little more fine-tuning, and with continued input from the citizens who will pay for and use the facilities, the city will have begun the exciting task of reclaiming the bayfront from the clutches of civic indifference and neglect.

APPENDIX 2

PRE-SUBMISSION CONSULTATIONS WITH GOVERNMENT REVIEWERS

List of Government Agencies Contacted

Summary of Responses to the Proposed Undertaking by Government Reviewers

GOVERNMENT AGENCIES CONSULTED

MINISTRY OF THE ENVIRONMENT:	
Environmental Approvals & Engineering Branch:	Ms. Lyn Feldman Mr. Ian Veitch
Environmental Assessment Branch:	Mr. Steven Lindley Mr. Gary Lahey Mr. Brian Ward
Hamilton Region Office:	Mr. Ray Stewart Mr. John Mayes
Hamilton District Office:	Mr. John Vogt Mr. Al Thachuk
MINISTRY OF NATURAL RESOURCES:	
Cambridge District Office:	Mr. Ted Harvey Ms. Nancy Tilt
DEPARTMENT OF FISHERIES AND OCEANS:	
Ontario Region:	Mr. Pat Chamut
Canada Centre for Inland Waters:	Mr. Vic Cairns
DEPARTMENT OF THE ENVIRONMENT:	
Environmental Protection Service:	Mr. K. Shikaze Mr. Ian Orchard
MINISTRY OF CITIZENSHIP AND CULTURE:	Mr. Carl Thorpe
Heritage Branch:	Ms. Anne de Fort-Menares
MINISTRY OF COMMUNITY AND SOCIAL SERVICES:	Mr. J.C. Lothbridge Mr. Bob Foster
MINISTRY OF GOVERNMENT SERVICES:	Mr. R.M. Farewell
MINISTRY OF HEALTH:	Ms. Barbara Blake Mr. Peter Block
MINISTRY OF INDUSTRY AND TRADE:	Mr. J.R. Delaney
MINISTRY OF LABOUR:	Mr. A.D. Health

MINISTRY OF MUNICIPAL AFFAIRS:	Mr. Ron Kennedy
MINISTRY OF THE SOLICITOR-GENERAL:	Mr. R.R. Philippe
MINISTRY OF TOURISM AND RECREATION:	Ms. Ruth Cornish
MINISTRY OF TRANSPORTATION AND COMMUNICATIONS:	
Environmental Office:	Mr. R.C. Hodgins
REGIONAL MUNICIPALITY OF HAMILTON-WENTWORTH:	
Regional Laboratories:	Mr. Vic Forde
Regional Health Officer:	Dr. Ian Cunningham
CN RAIL:	Mr. R.J. Spence
GO TRANSIT:	Mr. Glen Johnson
METRO TORONTO REGION CONSERVATION AUTHORITY:	Mr. Jim Agnew
HAMILTON AND REGION CONSERVATION AUTHORITY:	Mr. Ben Vanderbrugh Mr. Bob Chrystian Mr. John Coates
NIAGARA PENINSULA CONSERVATION AUTHORITY:	Ms. Marg Millar Mr. Gordon Harry
MACMASTER UNIVERSITY:	Dr. J. Sprule-Jones
ROYAL BOTANICAL GARDENS:	Mr. Peter Rice Mr. Len Simser
FEDERATION OF ONTARIO NATURALISTS:	Mr. M. Singleton

RESPONSES TO THE PROPOSED UNDERTAKING DRAFT

Organisation	Name	Reply	
Ministry of the Environment: Environmental Approvals & Engineering Branch	Lyn Feldman Ian Veitch	X	See attached pages
Ministry of Citizenship & Culture	Anne de Port-Menares	X	1) possibly need an archaelogical survey before construction 2) aerial gondola to Dundurn likely won't be allowed 3) road widening affecting historic buildings should be considered
Ministry of Government Services	R.M. Farewll	X	No concern
GO Transit	Glenn Johnson	X	No impact on services foreseen but keep them advised and inform CN Rail
Ministry of Industry & Trade	J.R. Delaney	X	No comment
Ministry of Municipal Affairs	Ron Kennedy	X	How does Master Plan fit with City's and Region's plans?
Ministry of Tourism & Recreation	Ruth Cornish	X	1) Development of streetscapes 2) Development of linkages to other tourist attractions 3) Appropriate signage not addressed
Ministry of Transportation & Communications: Environmental Office	R.C. Hodgins	X	No concerns

Regional Municipality of Hamilton-Wentworth: Health Department	Ian Cunningham	X	1) No mention of sanitary facilities or drinking water sources 2) Food premises to comply with Ontario Food Premises regulations and City Health By-Laws 3) Lagoon will have to have all contaminated material removed, doubts in water can be adequately treated 4) Noise levels are a concern
Ministry of Health	Barbara Blake	X	1) Doubts if treatment with chlorine will render lagoon fit for swimming 2) Suggests a "modified pool" like in Bronte Provincial Park or Brant Conservation Area
Ministry of Community & Social Services	J.G. Lothbridge Bob Foster	X	No concerns
Ministry of Labour	A.D Heath		No Reply
Hamilton Region Conservation Authority	Ben Vanderbrug	X	Strong support for the proposed undertaking
Royal Botanical Gardens	Allen Paterson	X	1) General support 2) Opposed to straight-line landscaping
Ministry of the Solicitor-General	R.R. Philippe	X	1) Access of fire department vehicles not addressed 2) Will increase demand for marine fire services 3) Road alterations may affect fire department responses 4) Review with Hamilton Fire Department

Ministry of Natural Resources Cambridge	Ted Harvey	X	1) Encouraged by suggestion to improve habitat with help of local sport clubs and will offer technical assistance and CFIP funds possible 2) Hamilton Harbour does not offer any significant fish habitat 3) Lakes & Rivers Improvement Act will need approval 4) Want to see detailed designs for further comment on Lakes & Rivers Improvement Act and fish enhancement
CN Rail	R.J. Spence	X	1) Drawings in plan to not accurately depict true situation 2) No mention of mitigating railway noise or security restrictions 3) All development adjacent to railway will have to conform to Canadian Transport Commission Railway Transport Committee 4) Railway will assume no financial burden and if they wish to expand in the future City may have to move

APPENDIX 3

ENVIRONMENTAL MANAGEMENT OF INDUSTRIAL WASTES ON HAMILTON ISLAND

Report prepared by

Booth Aquatic Research

ENVIRONMENTAL MANAGEMENT OF INDUSTRIAL WASTES ON THE FORMER LAX PROPERTY

Prepared for

The City Architect's Department

The City of Hamilton

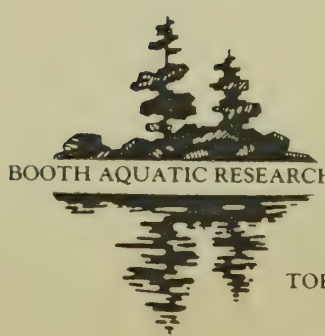
by

Booth Aquatic Research Group Inc.

David A. Ross

Gillian M. Booth

June 1986



BOOTH AQUATIC RESEARCH GROUP INCORPORATED

532 QUEEN STREET EAST
TORONTO/CANADA/M5A 1V2

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Appendix 1: Proposals for removal of industrial waste

Appendix 2: Monitoring program for detection of future problems

Glossary

Executive Summary

The report summarizes data from several sources which delineate the problem of pockets of industrial waste which have been deposited on the former Lax Property (referred to as the Property in this report). Recommendations are then made for the management of the Property to provide an environment safe for future public use.

Industrial waste material, primarily iron oxides of steel mill flue dust, have been found deposited both on the surface and scattered throughout the site. It is recommended that the surface piles of waste should be removed by a licenced waste disposal facility. This will eliminate any chance of erosion of the material into the Harbour or the atmosphere and will alleviate public concern. Proposals for this clean-up are appended.

Groundwater and nearshore water quality were analysed. Results show that very low levels of the metals associated with the industrial wastes are leaching into the Harbour. This evidence supports the conclusion that at present there is no cause for concern regarding contamination of the Harbour by the Property. It was recommended that groundwater monitoring be continued so that if any problems arose in future, they would be detected early and mitigative measures could be instituted at that time. The recommendations include capping the site with clay fill to reduce percolation from surface precipitation and/or installing a tile drainage system in conjunction with the proposed development.

An underwater visual survey of the perimeter of the site is recommended prior to development to determine whether there are additional deposits of industrial waste (including seepages of oil) below the water line. These could be dealt with during the dredging of the Property.

The recommended program will reduce the potential for contaminated water leaching into the Harbour, will eliminate the chance of wind erosion of the surface waste, will ensure that users of the site are not exposed to contaminated soil and will provide a conservative, environmentally and socially acceptable approach to dealing with the problem.

In summary, the recommendations include:

(1) Remove surface industrial waste from the Property;
(2) Award a contract for industrial waste disposal to either Philip Enterprises or Tricil Ltd. for a total cost not to exceed $215,300 or $164,00 respectively, based on the discussion in Appendix 1.
(3) Institute a water quality monitoring and inspection program;
(4) If development proceeds, then design drainage systems to minimize percolation of surface water through the site.

Introduction and Background

The City of Hamilton acquired the former Lax Property (the Property) in November, 1984. The Property was built starting in 1968 with clean fill primarily from the Clairemont Access Road. Filling with non-toxic industrial waste was permitted when a bulldozer was available to cover up waste material. It appears, however, that these conditions were not strictly adhered to. Surface soil sampling by the Ministry of the Environment (MOE) Phytotoxicology Section indicated that isolated areas contained industrial waste which had been used as fill in the construction of the Property and been left uncovered on the surface (Table 1). They recommended that some of this waste be removed from the Property, based on potential phytotoxicity, toxicity to grazing animals and human health considerations (Palmer 1985).

The City immediately arranged for further investigation into the extent of waste disposal in the Property. A series of 16 boreholes were drilled by McGlone & Associates and visual descriptions of the contents were prepared (McGlone 1985). Four of the soil sampling boreholes were prepared as piezometers to monitor the possible contamination of groundwater in the Property. The Regional Laboratories of the Municipality of Hamilton-Wentworth carried out analysis for trace metals on the cores and measured concentrations of metal contaminants in the groundwater (Forde 1985). Their report suggested that the industrial wastes on the site are in a highly oxidized state and do not pose a health hazard unless transported by wind. It was concluded that rainwater and snowmelt passing through the Property will not materially alter the concentrations of elements already present in the harbour.

The MOE Hamilton Region also monitored groundwater during the summer of 1985 using the same four piezometers as Forde (Mayes 1985). Analysis yielded similar results to those found by Forde (1985) (Table 3). The results of the chemical analyses by these three studies are summarized in Tables 1 (Palmer), 2 (Forde) and 3 (Mayes). In general, surface samples from identified waste dumpsites showed higher metal contamination than the pockets of material which are distributed through the Property. Much of the industrial waste on the surface is steel flue dust, which is classified by the Ministry of the Environment as a "hazardous waste". Also of concern was an oily substance which is seeping into Borehole 11 (Figure 2). This material was anlyzed and found not to contain high levels of PCBs but must be disposed of appropriately.

Booth Aquatic Research Group Inc. (BAR) was retained by the City of Hamilton to develop a management plan for the removal and/or containment of these pockets of industrial waste products in the Property. Consultations with the Hamilton Region MOE office,

Regional Laboratories and consulting engineers were incorporated into the development of this plan.

All data from previously mentioned sources were reviewed and utilized to determine the impact of the contaminated fill on the environment and to facilitate the development of a management plan. Further consultations with Hamilton Region MOE raised the concern of the possible effect the contaminated fill was having on the nearshore sediment and water quality in Hamilton Harbour. A sampling program was designed to address this concern.

Evaluation: Methods

Site Inspection:

A site inspection was carried out on May 22, 1986 with John Mayes (MOE Region) and Paul Kehoe (Pollution Abatement Officer, MOE). Areas which were obviously industrial waste were identified and staked.

Water and Sediment Sampling:

Nine stations were selected around the perimeter of the Property at which to sample sediments and nearshore water. Station selection was based on proximity to sites of industrial waste disposal, observed drainage patterns and to allow for adequate representation of variability around the site (Figure 3). On December 18, 1985, water samples were collected at each station from the nearshore area (0-0.5 m depth). Surface samples were collected from each of 4 control sites in the Harbour to establish background conditions in the Harbour at the time of sampling. Water samples were analysed for parameters identified in previous studies as being present in excessive concentrations in the landfill. All samples were preserved with nitric acid and submitted to the Regional Laboratories of Hamilton-Wentworth for analysis of the concentrations of cadmium (Cd), copper (Cu), nickel (Ni), lead (Pb), zinc (Zn), manganese (Mn) and chromium (Cr). Field pH was measured on all water samples using a Cole-Parmer Digisense meter within 6 hours of the collection.

Two to four sediment samples were collected from each station at 0, 5, 10 and 20 m offshore along a transect set perpendicular to the shore. A Ponar dredge was used to collect the top 10 cm of sediment in these locations. Samples which appeared to consist of industrial waste were submitted for analysis. The remaining samples from each transect were stored in refrigerators at the Regional Laboratories. Data recorded at the time of sampling included station depth, distance from shore, sample composition, colour, cohesiveness and texture.

Sediment samples were analysed for Cd, Cu, Ni, Pb, Zn, Mn, Cr and loss on ignition (LOI) at the Regional Laboratories and for PCBs and oil and grease at Zenon Environmental Ltd.

Results are tabulated in Tables 4 and 5.

Evaluation: Results

Nearshore Sediment:

Samples from the nearshore perimeter of the Property which appeared to consist of industrial waste were analysed. Results indicated that the sediment quality found at Stations 4-9 (Figure 3) was better in all cases than the mean for Hamilton Harbour sediments found by the MOE in 1980 (MOE 1985). Trace metals, organic content (LOI) and PCBs were present only in small quantities at these stations (Table 5).

Stations 1-3 (Figure 3), all at the southeast end of the bay separating the Property from the CN tracks, exhibit concentrations of all parameters measured, except Mn, at greater levels than the 1980 Hamilton Harbour mean (Table 5) (MOE 1985).

Stations 1A and 3A had the greatest concentrations of Cd at 16 mg/kg and 10 mg/kg respectively (Table 5), greater than the 5.7 mg/kg found by the MOE in 1980 for mean results in Hamilton Harbour (MOE 1985). Sediment Cu concentration of 340 mg/kg at Station 2B next to the storm sewer outlet was about 2.5 times the 1980 mean for Hamilton Harbour. Lead concentrations were as high as 945 mg/kg at Station 1A and Ni as high as 400 mg/kg at Station 2B (Table 1). Total PCB concentrations ranged from 0.22 to 0.82 mg/kg at Stations 1-3, compared to a median of 0.200 mg/kg for harbour sediments found by the MOE in 1980 (MOE 1985). Oil and grease concentration ranged from 6,500 to 17,000 mg/kg at Stations 1-3 (Table 1).

Nearshore Water Quality:

Concentrations of trace metals in the neashore water (Table 6) did not differ substantially from concentrations measured at control Stations 10-13 (Figure 1) or with MOE results for harbour means (MOE 1985), indicating that leaching of contaminants from the industrial waste was not detectable in ambient water quality.

The exceptions were Stations 1, 8 and 9. Station 1 had a measured concentration of Zn of 0.35 mg/L, almost 10 times the control concentrations (Table 6). Stations 1 and 8 had a measured total Mn concentration well above the control sites. Station 9 nearshore water quality showed a Zn concentration of 0.11 mg/L, greater than the control sites and measurements of harbour mean Zn of 0.046 mg/L (MOE 1985).

Site Inspection:

Figure 4 indicates approximate locations of the areas which were staked on May 22, 1986. Each is a localized surface site where industrial waste was dumped during filling of the Property. Table 7 contains descriptions of the material at each site based on identification by the Pollution Abatement Officer. The majority of the industrial waste material appears to be flue dust, identified as probably originating from Burlington Steel and dumped between 1972 and 1977 (John Vogt, pers. comm.). Other sites were determined to have smaller quantities, probably one or two truck loads, of other industrial waste, such as foundry sand, aluminum oxide and one pile of discarded battery casings.

Discussion

The studies referenced in the Introduction and subsequent site inspection found areas on the surface of the Property that are contaminated with industrial waste products and are clearly visible and lacking vegetative cover. Vertical bore hole sampling by Forde (1985) revealed additional small pockets of industrially contaminated fill to be distributed vertically and horizontally through the central area of the Property. Characterization of the contaminated fill by Forde (1985) (Table 2) and Palmer (1985) (Table 1) indicated high concentrations of Zn, Pb and Cd in some samples. Elevated levels of Cu and Cr were also noted. Oil was reported in Borehole 11.

Analysis of steel flue dust by Kramer and Murdoch (1985) indicated that the majority of the trace metals are associated with strongly bound insoluble silicates and ferrites, although Mn seemed to be quite soluble as a hydroxochloride. Dissolution of fine-grained metallic alloys and oxides by weakly acid solutions seems to mobilize some significant amounts of Cu, Cd, Pb and Zn. Measurements of pH of groundwater in the Property by Mayes (1985) and Forde (1985) revealed a range of pH 7-8. Under these conditions the majority of metal elements would remain fairly insoluble and should not threaten groundwater or harbour water quality.

However, slightly elevated concentrations of some metals were measured in the groundwater by Mayes (1985) and Forde (1985), indicating that some fraction of the total trace metals may be soluble and entering groundwaters (Table 3). Trace amounts of PCBs were also found by Mayes in some groundwaters. Some small pockets of contaminated fill discovered by Forde (1985) are below water table levels described by Trow (1984) and McGlone (1985) and are, therefore, in contact with the groundwater. Rainwater percolation may be leaching additional small quantities of contaminants from the surface pockets of industrial waste into the groundwater.

Investigations by BAR indicate that industrial waste is not currently polluting the harbour waters by groundwater or surface runoff. Nearshore water and sediment quality did not differ substantially from control stations (Tables 5 and 6) except at Stations 1-3. Nearshore sediments were somewhat more sandy than offshore sediments and contained lower concentrations of contaminants (BAR 1986).

However, nearshore sediment at Stations 1-3 was contaminated with trace metals and PCBs at concentrations which exceed Hamilton Harbour means (MOE 1985) and exceeded other samples taken from areas of proposed dredging offshore of the Property (BAR 1986). The close proximity of a storm sewer/combined sewage overflow is a potential cause of this contamination. Construction of the Property restricted the discharge of the storm sewer to the back end of a narrow bay (Figure 1) which receives little flushing. Some of this sediment contamination may also result from erosion of the nearby contaminated area at Sites 1 to 4 (Figure 4) or from exposed waste deposited in the sediments themselves.

The high concentrations of total metals found in sediments at Stations 1-3 were not significantly affecting local water quality. However, concentrations of Zn, Cu and Cr found in nearshore water did exceed the MOE guidelines for protection of aquatic life (MOE 1984). These guidelines provide a good, long-term objective for the harbour, but a more realistic comparison is with present harbour values to ensure that the Property does not adversely affect harbour waters or sediment. Zn concentrations in water sampled at Station 1A exceeded the control stations by 10 times (Table 1). At a hardness of about 200 mg CaCO3/L in Hamilton Harbour and pH of 7, the 0.35 mg/L of total Zn measured at Station 1 would not be acutely lethal to rainbow trout (Bradley and Sprague 1985) although sublethal effects cannot be ruled out. Stormwater runoff can load substantial amounts of Zn to a water body, but in the case of Hamilton Harbour less than 1% of total Zn inputs in 1977 were the result of stormwater (MOE 1985). Poor water quality at this site may, however, be related to the contaminated sediments.

Mn was also found at an elevated concentration in water samples from Stations 1A and 8 (Figure 3). Palmer (1985) identified his site 12 (Figure 1) as having very high concentration of Mn present in surface soil samples collected. Steel flue dust is thought to contain fairly soluble Mn (Kramer and Murdoch 1985) and surface runoff may be introducing Mn to the harbour in this area. No MOE guidelines are available regarding acceptable levels of Mn for drinking water or the protection of aquatic life.

Contaminated water and sediments found at Stations 1, 2 and 3 could eventually lead to increased body burdens of persistent compounds in harbour fishes. Fish can accumulate contaminants

from their water and their food. Bottom dwelling invertebrates such as oligochaete worms have been found to concentrate substantial amounts of persistent chlorinated organics such as PCBs (Oliver 1984). Bioaccumulation can eventually produce concentrations in fish tissue that are dangerous to top level consumers. At present most fish species sampled in Hamilton Harbour by the MOE can be eaten in unlimited quantities, with some restrictions imposed on larger size classes of carp, white perch and brown bullhead (MOE 1985).

Special consideration will have to be given to the sediments in this location. The removal of these sediments will be incorporated into the dredgeate disposal plan for the waterfront development.

Pollution of Hamilton Harbour from anthropogenic sources has been occurring since the late 1800s. Hamilton Bay receives effluents from numerous industrial operations and from treated wastewater and untreated storm sewer overflow from both Hamilton and Burlington. The excessive pollution is primarily a function of high Zn and Fe levels, however, and other metal levels are similar to those reported in other harbours in the Great Lakes (Nriagu et al. 1983). The volume of Hamilton Bay is approximately 3 x $10^8 m^3$ (MOE 1978) and it drains 4.5 x $10^8 m^3$ per year or about 1.8% of its volume per day. The Table below is adapted from Nriagu et al. 1983, to illustrate the major sources of pollution into the Harbour. The groundwater (based on Mayes 1986) flushing from the former Lax Property has been included here to give perspective to the negligible levels of contaminants which might be contributed by this source.

Sources of metals into Hamilton Harbour.
(Adapted from Nriagu, except former Lax Property data adapted from Mayes, MOE Region, pers. comm. 1986)

Source	Annual Flux (x 10^3 kg/yr) Cu	Pb	Zn	Cr	Fe	Mn
Municipal	6.6	4.1	34	14	120	13
Industrial	48	7.9	394	33	14,440	204
Streams (incl. Cootes Paradise)	3.5	5.9	11	4.1	450	38
Atmospheric	.13	.3	1.2	-	4.4	-
Former Lax Property	.001	.008	.092	.007	.039	.138
Total	58	18	440	51	14,970	255

Conclusions

At present the groundwater contribution of contaminants to Hamilton Harbour from the Property is negligible. The nearshore water quality survey of December, 1985, confirmed that leaching of contaminants is not currently detectable. There is, however, legitimate concern that there may be undetected leachate from buried industrial waste leaching very slowly toward the perimeter of the Property. Although this is unlikely as no problem has been detected in sampling to date, it is nevertheless an important consideration when dealing with an unmonitored landfilling operation such as the former Lax Property.

We therefore recommend that a monitoring program be instigated in consultation with the Hamilton Regional Office of the Ministry of the Environment. The City of Hamilton would then be able to detect and deal with any future leaching problems early, to minimize environmental damage.

Erosion of the surface deposits of industrial waste is of some concern. This material is technically classified as "hazardous waste" and should be removed to an appropriate disposal site. The oily material in Borehole 11 is also of concern. Even though it is non-toxic, it should be stabilized and removed to prevent future problems of seepage.

In summary, the pockets of industrial waste found on the Property are not adversely affecting Hamilton Harbour. They are, however, a source of toxic metals and should not be left open to erosion by wind and rain. Removal of the surface contamination is recommended. A monitoring program should be put in place to guard against future leaching problems and diversion of drainage from the site should be considered if development proceeds.

The following recommendations are suggested in order to minimize the potential risk of future harbour contamination resulting from surface runoff and rainwater percolation leaching surface contaminants into the groundwater. The small pockets of contaminated fill located deeper in the Property are not adversely affecting groundwaters at present, but the following plan will address future concerns.

Recommendations

(1) The majority of the surface industrial waste should be removed from the Property. Removal of the surface material will effectively eliminate the mobilization of surface contaminants by wind erosion, surface runoff and rainwater percolation. Although these areas of contaminated soils do not appear to be currently adversely affecting the groundwaters or Hamilton Harbour, they are not able to

support plant growth and are a concern to the public. Removal will satisfy the public's concern as well as ensuring a safe environment for future use of the site. Areas that require excavation have been delineated and staked (Figure 4, Table 6).

(2) Philip Enterprises and Tricil Ltd., the only two local companies licenced to dispose of Burlington Steel flue dust, were asked by Booth Aquatic Research to prepare proposals for dealing with the material identified in Table 7 as requiring excavation and removal. The terms of their proposals and the proposals themselves are attached in Appendix 1.

(3) A monitoring plan should be initiated to ensure that no unexpected leachate contaminates the groundwater in the Property or seeps into the Harbour. A recommended study design is attached in Appendix 2. The Ministry of the Environment should be approached for approval of the design and possible assistance in implementation of the monitoring program.

(4) If development proceeds then attention should be given to minimizing the flow of groundwater through the Property. This can be accomplished by diverting surface drainage into storm sewers and capping the existing surface with relatively impermeable clay prior to landscaping with topsoil. The clay requires compaction to prevent channels developing which allow water to percolate through. A compaction of 1×10^{-7} cm/sec permeability of 1 m of clay is set, for example, as a requirement for waste landfill sites in the United States.

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Table 1. Concentrations(dry weight) of 16 elements,conductivity, and pH in soil samples(0-15 cm depth) collected from 13 stations at the City of Hamilton proposed park site on November 29,1984. Due to the high concentration of many of elements,the values given are approximate. Station 5 is a control. See Figure 1. for station locations. Results in ppm. unless otherwise noted. From Palmer,1985.

Station	Al %	An	As	Bo	Cd	Ca	Cr	Cu	Fe %	Pb	Mn	Mo	Ni	Se	Vn	Zn	Cond. mmhos/cm	pH
1	25.0	13.0	3.9	690	28	0.9	220	7200	1.3	1800	2000	14	130	4	44	14000	4.0	7.1
2	1.0	63.0	96	12000	600	3.5	2300	2200	22	23000	45000	500	1000	3	1000	280000	1.2	8.8
3	0.4	41.0	92	8200	450	3.6	2800	2400	31	19000	57000	250	290	2	200	180000	0.3	8.5
4	0.9	3.0	9.7	3600	16	4	120	110	3.3	2000	3100	10	42	0.4	31	7700	0.3	7.7
5	1.0	11.0	5.5	12	1	4.7	16	43	2	48	690	1	16	0.2	23	140	0.3	7.7
6	1.9	0.5	8.7	34	1.3	3.6	27	13	3.4	19	690	1	28	0.4	29	100	0.1	7.9
7	0.5	0.5	1.7	21	1.0	1.3	170	43	1.1	50	1400	18	250	1.9	11	280	0.1	7.9
8	1.0	1.4	6.8	17	1.4	2.2	20	55	2.2	370	830	1	16	0.6	26	250	0.2	7.8
9	2.1	1.3	1.4	46	1.5	3	29	12	3.8	29	740	2	29	0.5	33	91	0.1	8
10	0.1	0.2	1.4	10	0.6	0.6	600	19	2.4	21	190	57	2500	0.5	9	90	0.1	8.4
11	1.6	12	15	3300	140	2.8	310	470	7.7	7100	10000	100	230	1.6	200	69000	0.2	8.1
12	1.0	69	87	15000	760	3.9	1800	1900	19	20000	36000	500	1000	4.3	1000	320000	0.4	8.2
13	0.5	24	90	3800	250	6.4	2300	1400	31	16000	47000	92	200	0.6	100	82000	0.3	8.4
MOE Proposed Clean-Up	-	-	25	-	4	-	1000	300	-	500	-	5	200	5	-	800	-	-

Table 2. Analysis of [illegible] samples from the Lac Property, by Acme Analytical Laboratories, August, 1985. Results in ppb/g dry weight unless noted. Prep Code, 1985.

Sample	Mo	Cu	Pb	Zn	Ag	Ni	As	Sb	Au
L-1	1.40	55.1	1002.5	570.1	1.20	24250.1	17.1	20275.1	4.1
L-2	1.82	2.5	125.1	95.1	1.80	1262.5	26.5	77.1	250.1
L-3	1.38	2.1	75.1	22.1	1.70	887.5	26.1	85.1	100.1
L-4	1.86	2.1	85.1	41.1	1.50	675.1	27.1	82.1	400.1
L-5	1.85	4.1	1475.5	190.1	1.80	1425.1	31.5	125.5	750.1
L-6	1.80	2.5	97.5	28.5	1.20	987.5	22.5	62.1	125.1
L-7	1.25	2.1	175.1	22.1	1.40	1275.1	28.1	91.5	250.1
L-8	1.66	2.5	142.1	57.1	2.00	2862.5	26.1	49.1	450.1
L-9	1.75	2.5	850.1	42.1	1.60	25000.1	42.5	137.5	250.1
L-10	1.85	2.1	90.1	45.5	1.20	1475.5	22.1	62.1	950.1
L-11	1.77	2.5	58.1	35.1	1.40	750.1	19.5	5.5	150.1
L-12	1.47	2.1	74.1	24.5	1.52	1037.5	21.1	225.1	1225.1
L-13	1.72	2.5	79.1	24.1	1.70	825.1	23.1	25.5	450.1
L-14	1.77	2.1	72.1	42.1	1.50	950.1	22.1	400.1	2000.1
L-15	1.72	11.1	86.1	45.1	1.70	1012.5	23.5	200.1	1975.1
L-16	1.88	2.1	124.5	42.1	1.70	837.5	28.5	450.1	2150.1
L-17	1.84	2.1	75.5	24.1	1.90	862.1	26.1	40.1	250.1
L-18	1.46	2.5	74.5	40.1	1.40	887.5	22.5	42.1	225.1
L-19	1.87	2.1	56.1	24.1	1.20	650.1	20.1	46.1	175.1
L-20	1.22	2.5	84.5	25.5	1.90	825.1	22.1	28.5	125.1
L-21	1.48	2.1	94.5	35.1	1.54	1062.5	20.1	56.1	475.1
L-22	1.22	2.1	475.1	101.1	1.95	10000.1	422.5	850.1	225.1
L-23	1.62	2.1	62.1	31.5	1.70	2950.1	24.1	262.5	125.1
L-24	1.25	2.1	56.5	28.5	1.24	862.1	22.1	47.5	250.1
L-25	1.24	2.5	237.5	120.5	1.80	7500.1	25.5	700.1	450.1
L-26	1.62	2.1	66.1	30.1	1.74	775.1	21.1	95.1	300.1
L-27	1.42	2.5	64.1	22.5	1.20	1025.1	24.5	200.1	175.1
L-28	1.41	2.5	222.5	125.1	1.40	1287.5	48.1	48.1	175.1
L-29	1.22	4.5	42.5	152.1	19.70	900.1	21.1	187.5	450.1
L-30	1.42	2.5	41.5	18.1	1.10	387.5	18.1	48.1	212.5
L-31	1.29	2.5	41.5	22.1	1.40	900.1	22.1	162.5	537.5
L-32	1.57	3.1	71.1	44.5	1.72	1537.5	24.5	787.5	2637.5
L-33	1.46	2.5	138.5	86.1	4.20	2237.5	37.5	287.5	400.1
L-34	1.52	2.5	25.1	22.1	1.46	1012.5	19.5	71.1	162.5
L-35	1.42	7.1	122.5	45.1	1.90	737.5	24.5	900.1	2225.1
L-36	1.69	5.5	120.5	36.1	1.70	487.5	19.5	225.1	700.1
L-37	1.37	4.5	225.1	42.1	1.30	987.1	21.1	287.5	700.1
L-38	1.51	7.5	175.5	56.1	1.85	1425.1	28.1	787.5	1650.1
L-39	1.58	4.1	57.1	54.5	1.77	875.1	25.1	162.5	400.1
MDL Precision	-	1	200	200	-	-	200	200	200

Chemex Labs Inc.

Table 3. Analysis of groundwater from the Lax Proprty by the MOE(Mayes,1985) and Hamilton-Wentworth Regional Laboratories(Forde,1985). See Figure 2 for station locations. Results in ug/l.

Sampler	Station	Fe	Mn	Al	Cn	Cd	Cr	Cu	Ni	Pb	Zn	PCB
	2	1.700	2.400	1.500	-	<0.002	0.035	0.058	0.012	0.093	0.560	-
Mayes	3	1.600	0.600	0.860	-	<0.002	0.035	0.063	0.014	0.034	0.370	0.00002
July,1985	4	2.300	8.600	1.800	-	<0.002	0.050	0.160	0.014	0.052	0.300	0.00002
	11	1.700	2.700	0.670	-	0.010	0.033	0.047	0.014	0.150	3.700	0.0008
	13	4.200	2.300	2.200	-	0.013	0.040	0.440	0.034	0.890	5.800	
	2	-	9.900	1.400	<0.002	<0.002	0.073	0.074	0.024	<0.030	0.250	
Mayes	3	1.650	13.000	0.860	0.114	<0.002	0.073	0.074	0.026	<0.030	0.190	-
Aug,1985	4	0.100	15.000	2.100	-	0.014	0.090	0.110	0.048	<0.030	6.200	-
	13	<0.060	1.900	0.340	<0.001	0.006	0.020	0.044	0.015	0.040	1.800	-
	2	-	2.53	-	-	<0.01	0.17	0	<0.1	0	0.03	-
Forde	3	-	0.30	-	-	<0.01	0.16	0	0	0	<0.01	-
Aug,1985	4	-	0.94	-	-	<0.01	0.75	<0.01	0	<0.01	0.2	-
	13	-	1.29	-	-	<0.01	0.26	0.02	0	0	0.42	-

< : indicates concentration near detection limit; actual value may be less than this

Table 4 Physical description of sediment samples collected from the Lax Property nearshore areas, by Booth Aquatic Research, December 17, 1985.

Station	Water depth (m)	Distance from shore (m)	Composition (%)	Color	Cohesiveness	Texture
1A	0.3	2	100% silt	black	high	greasy&oily
1B	1.0	5	100% silt	black	high	greasy&oily
1C	2.0	10	100% silt	black	high	greasy&oily
1D	2.0	20	100% silt	black	high	greasy&oily
2A	0.5	1	100% silt	black	high	greasy&oily
2B	1.0	5	100% silt	black	high	greasy&oily
2C	1.0	10	100% silt	black	high	greasy&oily
2D	2.0	20	100% silt	black	high	greasy&oily
3A	2.0	5	100% silt	black	moderate	greasy&oily
3B	2.0	10	100% silt	black	moderate	greasy&oily
4A	1.0	1	80% sand 20% silt	grey-brown	low	gritty
4B	2.0	5	50% sand 50%silt	grey	low	greasy
4C	2.0	20	80% silt 20% sand	black-grey	low	greasy
5A	1.0	5	80% sand 20% silt	brown	low	gritty
5B	1.0	10	60% sand 40% silt	grey-brown	low	gritty
5C	1.0	20	60% sand 40% silt	grey	low	gritty
6A	1.0	5	60% sand 40% silt	grey-brown	low	gritty
6B	3.0	10	100% silt	grey	moderate	gritty
6C	4.0	20	100% silt	black-grey	moderate	gritty
7A	1.0	5	60% sand 40% silt	brown	low	gritty
7B	2.0	10	80% silt 20% sand	grey-brown	moderate	-
7C	4.0	20	90% silt 10% sand	black-grey	moderate	-
8A	0.5	3	60% clay 40% silt	grey-brown	high	greasy
8B	1.0	6	90% silt 10% sand	black-grey	moderate	gritty
8C	1.5	10	100% silt	black-grey	high	-
9A	1.0	1	60% sand 20% gravel 15% organic 5% brick	grey-brown	low	gritty
9B	2.0	5	90% silt 10% organic	black	high	gritty
9C	2.0	15	90% silt 10% sand	black	high	gritty

Table 5. Trace metal,PCB,oiland grease and loss on ignition of sediment samples collected from nearshore areas of the Lax Property by Booth Aquatic Research,December 17,1985. All analysis are in mg/kg unless otherwise noted.

Station	Cadmium	Copper	Chromium	Zinc	Manganese	Nickel	Lead	Loss on ignition(%)	PCB	Oil&Grease
1A	16	82	150	5200	1580	20	945	4.42	0.22	7800
1B	4	122	142	1520	855	130	450	12.50	0.82	14000
2A	3	122	128	560	780	95	180	9.08	0.45	17000
2B	2	340	129	955	1270	400	360	12.43	0.25	6500
3A	10	160	240	2800	1280	180	655	1.34	0.60	11000
4A	2	34	114	360	775	20	56	1.60	<0.01	630
5A	4	30	148	1060	1260	30	260	2.30	0.07	530
6A	2	49	112	380	625	20	76	3.89	0.06	1800
7A	2	50	180	280	630	20	43	2.45	<0.01	230
8A	2	16	190	73	525	20	22	3.21	<0.01	190
9A	3	28	88	370	660	20	71	2.94	<0.01	440
MOE MEANS ‡	5.7	130	204	2700	1900	44	310	9.8	0.20	-

‡ MOE Hamilton Harbour Sediment Means(MOE,1985)

Table 6. Trace metal concentration(mg/l) of water samples collected from nearshore areas of the Lax Property,December 18,1985, by Booth Aquatic Research.

Station	Field pH	Cadmium	Copper	Chromium	Zinc	Manganese	Nickel	Lead
1	7.97	0.0	0.02	0.09	0.35	0.08	0.0	0.0
2	8.00	0.0	<0.01	0.08	0.02	0.03	0.0	0.0
3	8.08	0.0	<0.01	0.08	0.00	0.02	0.0	0.0
4	7.95	0.0	<0.01	0.07	0.04	0.03	0.0	0.0
5	7.86	0.0	<0.01	0.06	0.03	0.05	0.0	0.0
6	8.19	0.0	<0.01	0.07	<0.01	0.04	0.0	0.0
7‡	8.17	-	-	-	-	-	-	-
8	8.03	0.0	0.00	0.08	0.02	0.07	0.0	0.0
9	8.01	0.0	<0.01	0.07	0.11	0.03	0.0	0.0
10	7.94	0.0	0.03	0.08	<0.01	0.04	0.0	0.0
11	7.93	0.0	0.02	0.06	<0.01	0.04	0.0	0.0
12	7.90	0.0	0.02	0.06	0.08	0.03	0.0	0.0
13	7.95	0.0	<0.01	0.06	0.03	0.04	0.0	0.0
MOE‡‡ Objective	6.5-8.5	0.0002	0.005	0.1	0.03	-	0.025	0.005

< : indicates concentration near the detection limit; real value may be less

‡ sample not available.

‡‡ MOE water quality objectives for the protection of aquatic life(1984).

Table 7. Description of surface industrial waste deposited on the Property and recommended actions

Site No	Description	Action
1	Foundry sand and brick: one pile on the surface	Leave: unless phenols are very high
2	Foundry rubble similar to (1). Test: leachate for metals and phenols	"
3	Various surface patches of iron oxides mixed with dirt and a few ladle bottoms	Scrape off and remove or cover with clay
4	Slope face 6 m high x 100 m long with mixed iron oxide and dirt. Note: 3-4 m north of slope is Borehole II where a tarry oil is is seeping in at 6-7 m. This is being tested for PCBs and may need special handling.	Excavate slope back to clean earth and remove. PCB < 50: stabilize and remove. PCB > 50: remove using special procedures.
5	Iron oxide: one pile near the shore. This This needs to be excavated to the bottom.	Excavate and remove
6	Small isolated pile of iron oxide	Remove
7	Small isolated pile of iron oxide	Remove
8	Isolated pile of aluminum oxide (with copper sulphate)	Remove
9	Battery cases with some old lead plates	Remove
10	Granulated slag	Remove
11 & 12	This large expanse is fairly pure iron oxide with some ladle bottom (5-10). It is fairly shallow, < 1 m in most sections. It is 7-30 m wide and 200 m long. It does not reach as far as the shore.	Remove (recycle?)
13	Iron oxide: shallow layer on surface	Scrape and remove
14	Iron oxide pile of surface	Remove
15	Slope face and bank of iron oxide. Needs to be excavated back to clean earth	Remove
16	Slope face and small pile of aluminum oxide and copper sulphate in several piles	Remove

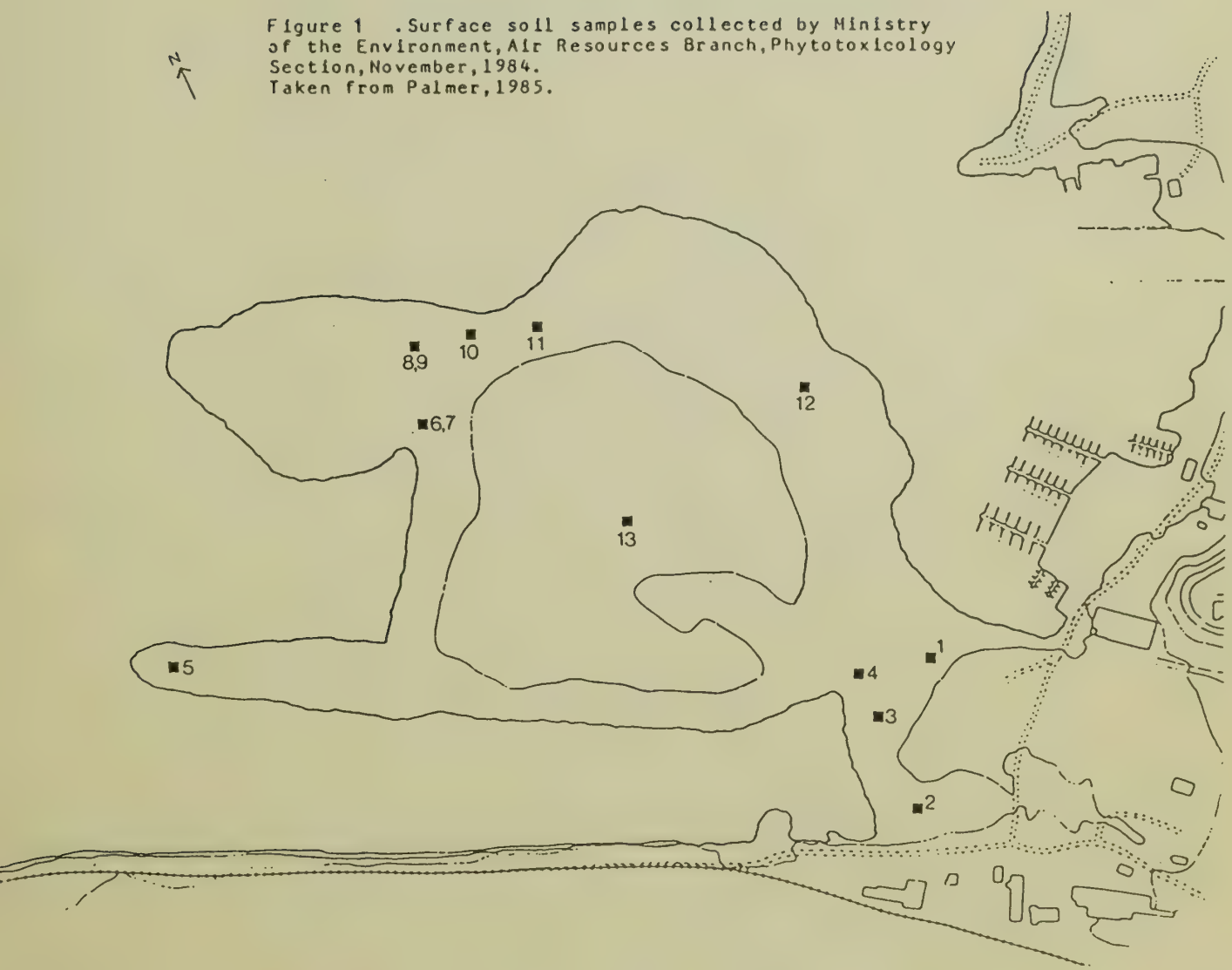


Figure 1 .Surface soil samples collected by Ministry of the Environment, Air Resources Branch, Phytotoxicology Section, November, 1984.
Taken from Palmer, 1985.

Figure 2 Bore hole locations for samples collected by Hamilton-Wentworth Regional Laboratories, August, 1985. Taken from Forde, 1985.

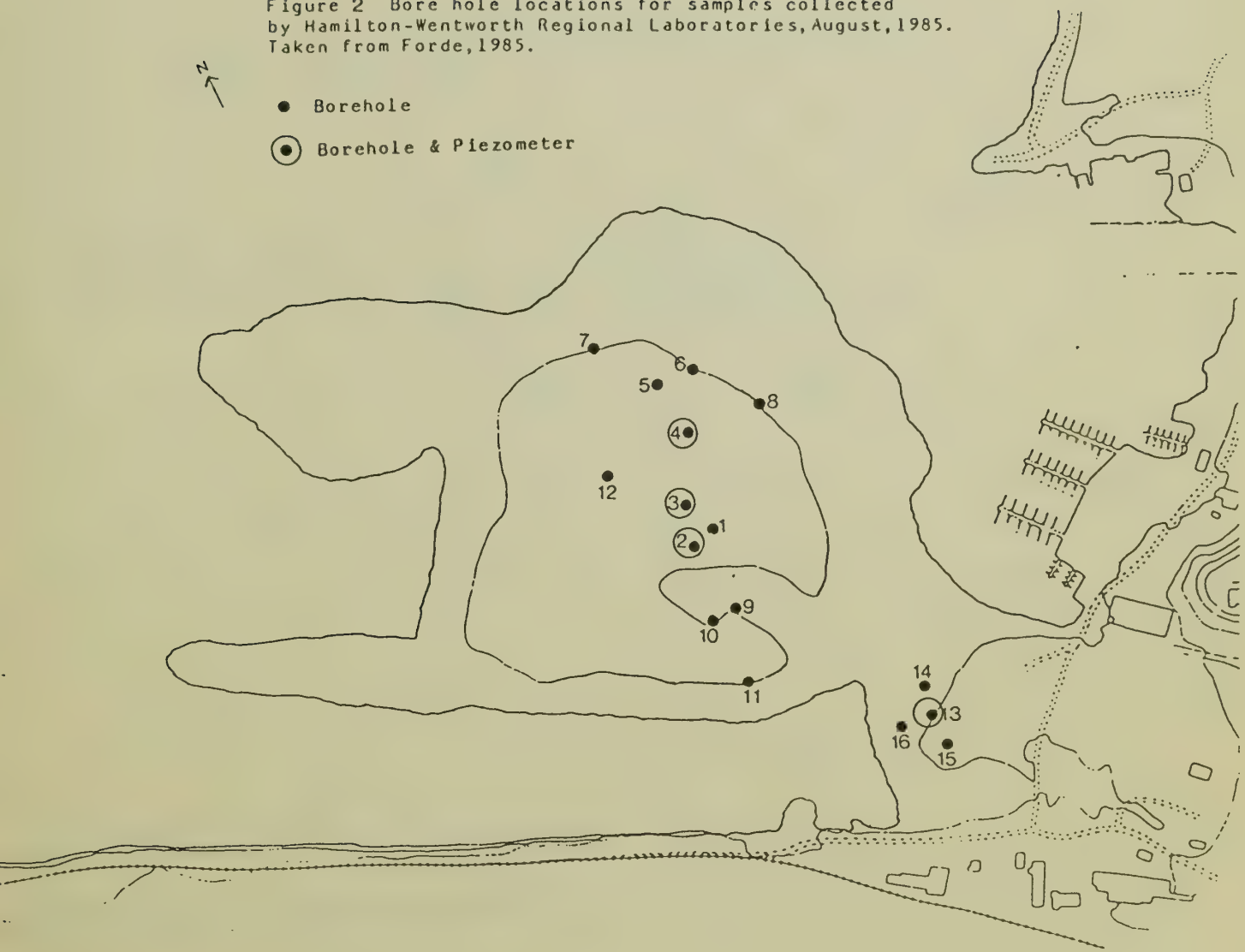
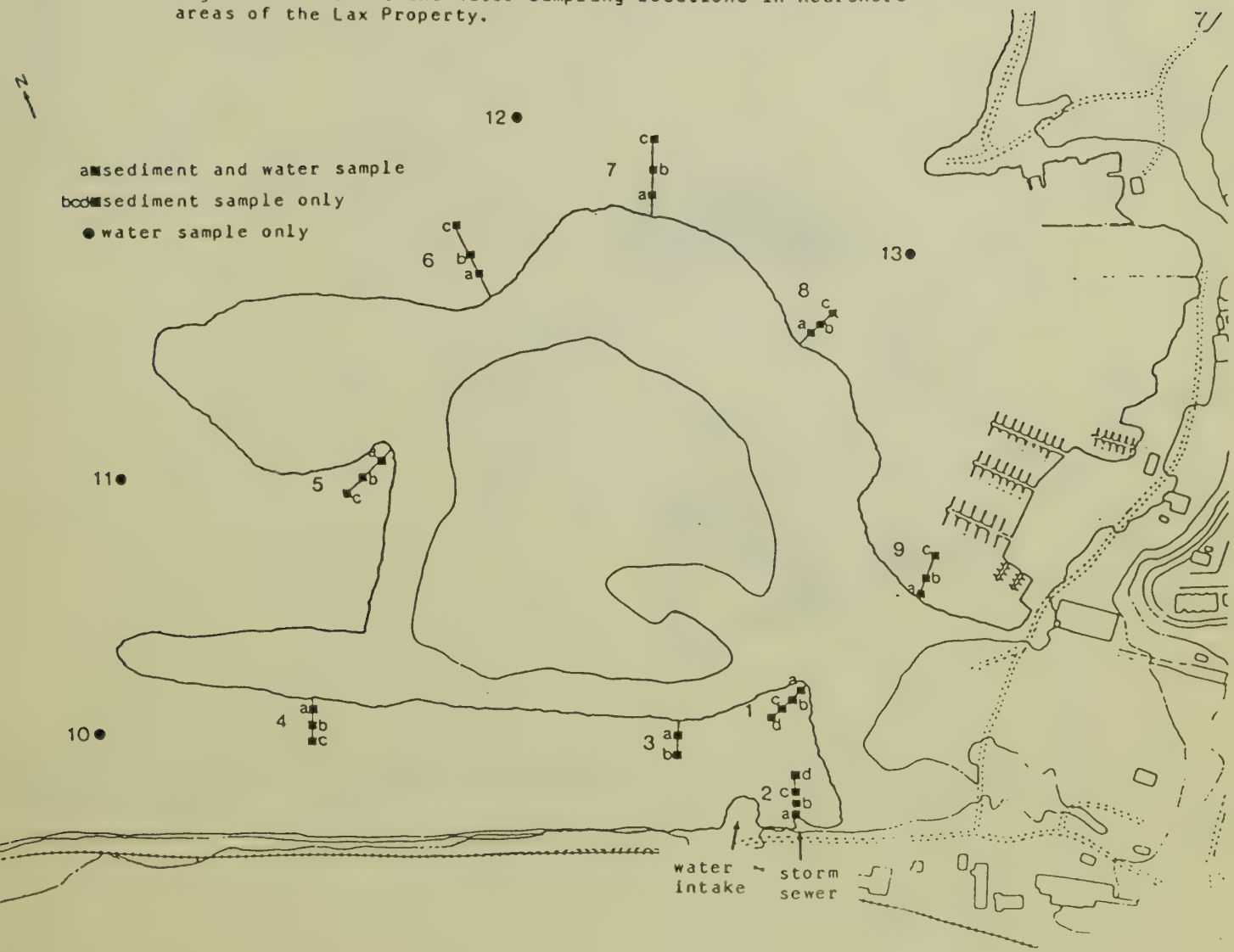


Figure 3 Sediment and water sampling locations in nearshore areas of the Lax Property.



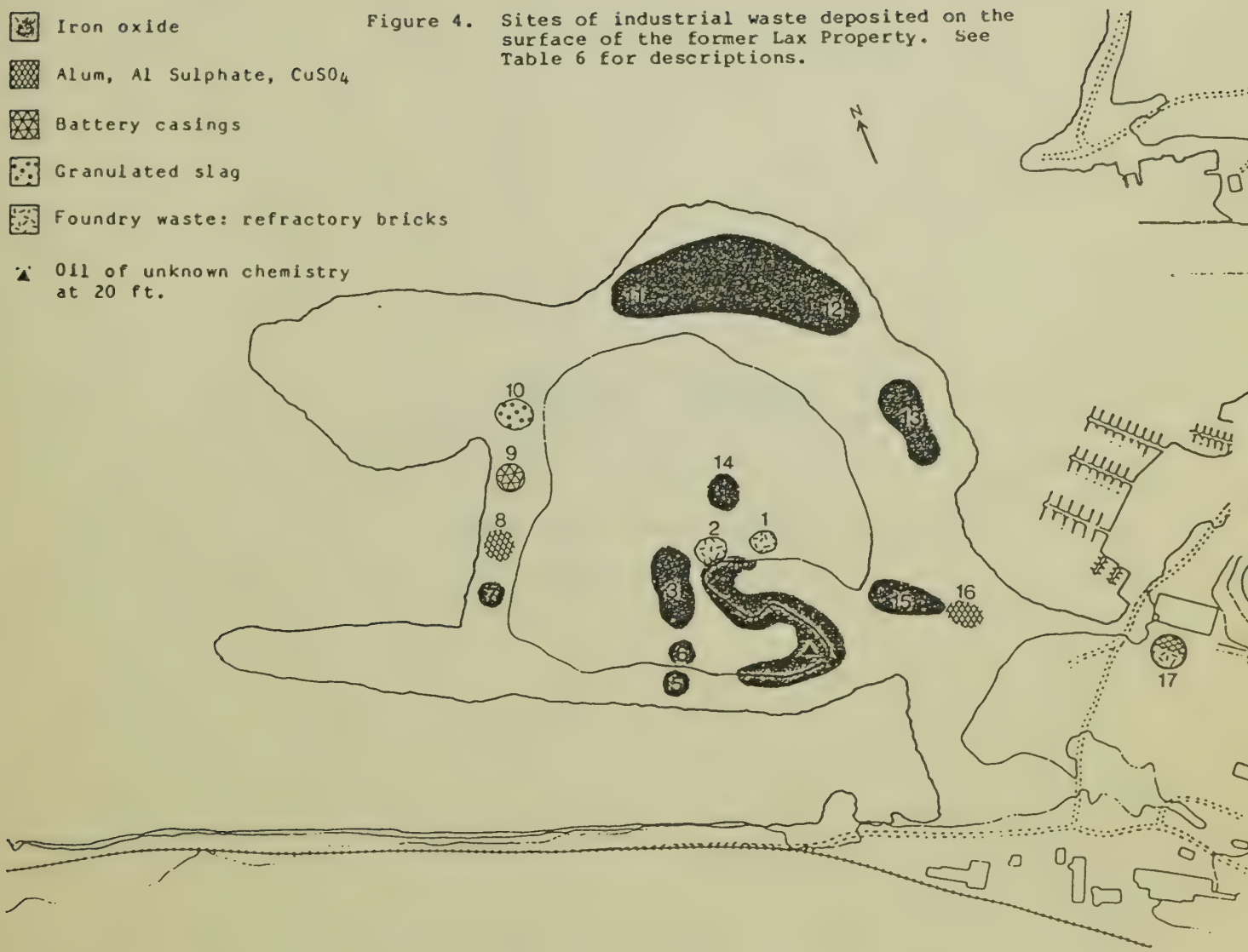


Figure 4. Sites of industrial waste deposited on the surface of the former Lax Property. See Table 6 for descriptions.

Appendix 1
of Environmental Management of
Industrial Wastes on Hamilton Island

PROPOSALS FOR REMOVAL

OF INDUSTRIAL WASTE

BOOTH AQUATIC RESEARCH GROUP INCORPORATED

532 QUEEN STREET EAST
TORONTO/CANADA/M5A 1V2

(416) 362-2457

May 29, 1986

Tricil (Sarnia) Ltd.
R.R. #1 (Telfer Side Road)
Corunna, Ontario
NON 1GO

Attention: Mr. Brent Bolger

Philip Enterprises Inc.
P.O. Box 423, Station B
Hamilton, Ontario
L8L 7W2

Attention: Mr. Allen Fracassi

Dear Sirs:

We have been retained by the City of Hamilton to advise them regarding rehabilitation of the former Lax Property (indicated on the attached map). Surface and borehole sampling of the property has revealed isolated instances of hazardous and non-hazardous waste products (as defined by the Ontario Ministry of the Environment - OMOE), primarily iron oxide. We would like to obtain estimates of costs for removing this material.

The attached map and site descriptions* indicate approximate locations of the piles of material identified by the OMOE as requiring removal. The surface areas and locations indicated are approximate. No estimate of tonnage can be made until the extent of contamination below the surface is determined. The final decision to remove material or leave it in place will be made by the OMOE. The following conditions will apply:

(1) The contractor will provide all excavation equipment.

(2) The contractor will provide all containers and transportation for material.

(3) Wheels of transporting vehicles will be washed before leaving the site to prevent tracking of waste into City streets.

* For map and site descriptions, see Figure 4 and Table 7.

(4) The contractor will arrange with and pay for the City to provide dust control.

(5) Waste will be excavated to the interface of waste material and clean earth and no further.

(6) All large iron pieces (such as ladle bottoms) will be removed and recycled where possible.

(7) If unidentified liquids are uncovered during excavation, the OMOE must be advised immediately and the site must be abandoned until further notice from the OMOE.

(8) If isolated unidentified drums of liquid are uncovered, they should be set aside until instructions are received from the OMOE. Meanwhile work at that site can continue. If, however, there appear to be many drums, then all work at the site should cease until the OMOE is consulted.

(9) At Sites 1 and 2, the foundry sand should be tested for phenols. OMOE will then determine whether this material should be removed.

(10) The oil identified at 6-7 m at borehole II in Site 4 must be tested for PCBs. If the PCB levels are < 50 ppm, the material should be stabilized and removed. If the PCBs are > 50 ppm, then appropriate licences will be required and the OMOE should be consulted.

(11) Operating hours 07:00 to 17:00.

(12) Any staging area should be as concealed as possible. A two stage process of first excavation and then handling and transportation is permissible, providing the piles of excavated material are secure.

(13) The contractor must abide by Regulation 309 of the Environmental Protection Act and by its own licencing requirements. All required manifesting is to be completed by the contractor with appropriate copies being forwarded to the City of Hamilton.

It is appreciated that costs will be partially dependent on volumes. Please advise us in your cost estimate if volume (tonnage) has any effect on your price. A price per ton of material would be appropriate.

If you have questions, please call me or David Ross. A site visit can be arranged. Please note that this request for an estimate does not in any way commit Booth Aquatic Research or the City of Hamilton.

Sincerely,
BOOTH AQUATIC RESEARCH

Gillian M. Booth

c.c. J. Tollefsen, City of Hamilton
J. Vogt, Ontario Ministry of the Environment

Encs.
GMB/rs

PHILIP
ENTERPRISES INC.

P.O. BOX 423, STN. B, HAMILTON, ONTARIO L8L 7W2 TEL.: (416) 544-6687

June 10, 1986

Booth Aquatic Research Group Incorporated
532 Queen Street East
Toronto, Ontario
M5A 1V2

Attention: Gillian M. Booth

Dear Mesdames:

Re: Rehabilitation of Former Lax Property

Further to your letter of May 29, 1986 and pursuant to your request, we are pleased to provide you with the following quotation:

For providing all necessary excavation equipment, including mobilization and demobilization;

For providing all necessary containerization and transportation, including stocking of material;

For the wheel-washing of transporting vehicles before leaving site to prevent tracking of waste;

For the provision of dust control;

For the provision of a staging area with appropriate leachate control to free it from contaminated run-off and located to minimize visual impact;

For the processing, transportation and disposal of material, all in accordance with The Ministry of the Environment;

For the provision of appropriate safety wear;

For the provision of full-time supervision and a fully-trained technician with access to our in-house chemist; and

For the provision of a field office to faciliate communication and Ministry of the Environment Liason;

Our price will be ....$110.24 per net ton of contaminated material.

For iron oxide that we are successful in recycling, upon our determination, as opposed to disposal, our price in lieu of the $110.24 as above, will be ....$90.00 per net ton of contaminated material.

For foundry sand, aluminum oxide, battery cases, granulated slag, and copper sulphate that upon Ministry direction can go directly to site specific landfill, without processing, our price will be ....$25.00 per net ton of contaminated material.

Should screening be necessary for any material in order to faciliate processing, our price will be ....$3.50 per net ton of contaminated material screened.

Should grading of any area be required, our price will be ....$1.50 per yard of material used for regrading, as determined by the City Engineer.

A price for the stabilization and removal of PCB contaminated material of less than 50 ppm can only be given when the actual extent of contamination is determined. However, our price of ....$110.24 may be used as a guideline.

A minimum four hour stanby charge of $100.00 per hour will apply for downtime caused by factors beyond our reasonable control.

All testing required by the Ministry will be extra.

Please be advised that this is a joint proposal by Philip Enterprises Inc. and Solid Waste Recalamation Inc., a wholly owned subsidiary of The Waxman Holding Corporation Inc. All invoicing will be done by Solid Waste Reclamation Inc.

The following conditions will apply:

(1) Our batch plant weigh scale will govern weights of all processed materials. A scale, agreeable to both parties, will govern weights of all other materials not requiring processing.

(2) Invoices, for work completed, will be rendered every two weeks for net payment within 30 days, with a 2% per month charge on overdue accounts.

(3) Waste will be excavated to the interface of waste material and clean earth and no further, as determined by The Ministry of the Environment. The final decision, to remove material or to leave it in place, will be made by The Ministry of the Environment.

(4) All large iron pieces (such as ladle bottoms) will be removed and recycled where possible.

(5) If unidentified liquids are uncovered during excavation, The Ministry of the Environment will be advised immediately and the "specific site" will be abandoned until further notice from The Ministry of the Environment.

(6) If isolated, unidentified drums are uncovered, they will be set aside until instructions are received from The Ministry of the Environment. Meanwhile, work at that site will continue. If, however, there appear to be many drums, then all work at the "specific site" will cease until The Ministry of the Environment is consulted.

(7) Operating hours 07:00 to 17:00.

(8) Regulation 309 of the Environmental Protection Act will be abided by, as well as our own licensing requirements. We will complete all required manifesting with appropriate copies being forwarded to the City of Hamilton.

Thank you for affording us this opportunity to present our quotation. Rest assured of our continued attention to the City's interests and to the strict requirements of our industry.

We hope this meets with your favour.

Yours truly,

PHILIP ENTERPRISES INC.

Allen Fracassi

SOLID WASTE RECLAMATION INC.

Michael S. Waxman

PHILIP

TRICIL

June 12, 1968

Ms. Gillian Booth
Booth Aquatic Research Group Inc.
532 Queen St E.
Toronto, Ont.
M5A 1V2

Dear Ms. Booth:

Thank you for this opportunity to quote on the Lax Property excavation and disposal requirements. Tricil's suggested site procedure and quotation are attached.

It is our proposal to remove the leachate toxic heavy metal wastes for entombment into Tricil's secure chemical Landfill situated in the Sarnia vicinity. This site is located on Tricil owned land which has an extremely low permeability lacustrine clay. A geologic formation such as this ensures that water mobility is drastically impeded and hence the restriction of heavy metal migration. The resulting advantage of such a site is the reduced liability for future environmental impairment and the associated financial responsibilities.

On behalf of Tricil, I thank you in advance for presenting our proposal to the City of Hamilton. I look forward to working with Booth Aquatic Research and the City of Hamilton in providing the necessary equipment and experience in managing the environmental restoration of the Lax Property.

If you should have further inquiries, please feel free to contact me personally.

Yours truly,
Tricil (Sarnia) Limited

Brent Bolger /b.

Brent Bolger, B.Sc.
Technical Sales Representative

TRICIL

LAX SITE PROPOSAL - HAMILTON

Stage 1 - Prework and On-site Preparation

1. Review PCB analysis results from M.O.E. Hamilton. Immediate review of future direction to be reassesssed if PCB's identified.

2. Extract samples of foundry sand and rubble at sites 1 and 2 and forward to Xenon Labs for analysis of phenols. Based on sample results this material may be removed or left as is on-site. Acceptable limits of phenols will be determined by the M.O.E.

3. Determination of collection/staging area to be arranged through discussion with Booth Aquatic Research, City of Hamilton, Tricil, and Tricil's subcontractor.

4. Excavate dyke staging area, truck decontamination area, and drum holding area on-site.

5. Co-ordinate with the City of Hamilton a street cleaning schedule to accommodate terms of tender request.

6. Identify through consultation with Booth Aquatic Research, and the City of Hamilton authorized personnel to sign manifests.

7. Confirmation of purchase order and any restrictions (volumes or dollars) be reviewed.

8. Through consultation with the City of Hamilton, Booth Aquatic Research, Tricil, and Tricil's subcontractor, the final disposition (i.e. backfill, grading, etc.) will be reviewed.

9. Booth Aquatic Research or designate will be required to stake out areas of excavation to ensure the appropriate areas of contamination will be excavated and removed. M.O.E. approval of excavation required at each site identified before backfilling or grading.

Stage 2 - Commencement of Site Excavation

1. There are two major sites of excavation - site 4 and site 11, 12. In conjunction with site 4- sites 1, 2, 3 and 14 may also be directly loaded into vehicles. If deemed necessary by Tricil and Tricil's subcontractor this material, in part or in whole, may be removed to the staging area.

2. Secondary sites of contamination include sites 5-6, 13, 15 and 16. These materials may be loaded directly at contamination sites or moved to the staging area as deemed necessary by Tricil, and Tricil's subcontractor.

cont'd....2.

3. Tertiary sites of contamination includes 10, 9 8, 7 and possibly 17 (no stipulated requirements previously identified by Booth Aquatic Research). These sites will be excavated and moved to staging area.

4. Shipments to Tricil Sarnia will commence in conjunction with available volumes for shipment (6 truckloads/day). Trucks will be washed in dyke area before leaving site.

5. Work will continue from 0700 to 1700 hours each day until completed.

6. Excavated drums or unknown materials will be left in the site area until identification is possible or relocation to containment site if safe transfer deemed possible. Any further action on these materials will be done in conjunction with normal Tricil procedures and M.O.E. discussions. Costs incurred will be negotiated should this occurrence arise.

If PCB's are identified during excavation, Tricil reserves the right to withdraw from the project immediately. Any costs incurred to this point will be assessed for payment.

7. Liquid truck washings will be coded and removed as a liquid for disposal if necessary.

8. Grading and/or backfilling will be the final sight closure measure.

9. On-going approvals (consultation will be requested from the M.O.E., City of Hamilton, and Booth Aquatic Research. In this way any deviations from the anticipated project can be discussed and assessed at the time of the occurrence.

10. Excavated ladle bottoms to be set aside for reclaim by the City of Hamilton directly.

LAX PROPERTY QUOTATION
CITY OF HAMILTON

Site Preparation and Set-up

A) Preparation

- includes equipment delivery and removal from site and sample analyses set-up charges — $3,000.00 per mobilization (one anticipated)

B) Excavation

- rates are based on 8 hour days for one bull dozer, one backhoe, one tandem dump truck, truck rinsing equipment, layover and site supervision. Estimates for excavation of waste are at approximately 125 - 150 tons per day.

Excavation Charges -	$2500.00/day.
Overtime if required @ an additional	$ 120.00/hr.

C) Transportation and Disposal

- Transportation to Tricil Sarnia for entombment into secure landfill @ — $60.00/ton Imp.

D) Extra Items

- 1. Street cleaning costs will be assessed by the City of Hamilton and these charges will be invoiced back to the City at cost.

- 2. Unspecified or unusual extra items will be invoiced at Tricil rates or cost plus 20%, whichever is applicable. Tricil will endeavour to make these costs known in advance if possible.

E) Steel Reclaim - Ladle Bottoms

- Uncovered ladle bottoms will be set aside for steel reclaim by the City of Hamilton for direct negotiation.

COMPARISON AND RECOMMENDATIONS

Comparison

The following is an attempt to compare the two proposals.

(1) Methodology is substantially different between the proposals, making costs difficult to compare. Exact costs cannot be developed as the underground extent of material requiring removal cannot be determined until excavation proceeds. Estimates based on approximate surface area of the industrial waste range from 500 to 2,000 tons of material to be removed, with a best guess of 1,000 tons. Based on the proposals and several assumptions outlined below, the following table presents costs for three tonnage estimates. Note that while the Philip Enterprises proposal allows a cost saving if material is found to be recyclable, Tricil will not attempt recycling. This could result in cost savings based on recycled material and is reflected in the table below.

Total Cost Estimate for Removal and Disposal of Waste
(rounded to the nearest $100)

	TOTAL TONS TO BE REMOVED		
	500	1,000	2,000
Tricil Ltd.	$ 44,100	$ 84,300	$ 164,000
Philip Enterprises Inc.:			
(a) No recycling	$ 47,700	$ 103,500	$ 215,300
(b) 50% recycling	$ 42,600	$ 93,400	$ 176,800

(2) Philip Enterprises Ltd. is able to commence the operation immediately on award of a contract. Tricil Ltd. is not in a position to begin until mid-August. The environmental impact of a one or two month delay is negligible. We are not in a position to comment on the social impact or public perception of the problem. The time delay caused by awarding the work to Tricil must be weighed against the extra cost incurred by going to Philip.

Assumptions:

(1) 100 tons of material such as foundry sands and battery casings could potentially be removed by Philip at $25/ton. Tricil would still charge $60/ton plus associated costs of excavation.

(2) City street cleaning was not included explicitly by Tricil and an arbitrary $1,000 has been added to their cost. Similarly, weighing of trucks has not been included explicitly and an arbitrary $.25/ton has been added to their cost.

(3) Tricil has estimated 125 to 150 tons per day for excavation and incidental costs for a total cost of $2,500 per day. Assuming the lower tonnage per day, a cost of $20 per ton has been estimated. This estimate explicitly includes regrading and filling.

(4) Regrading by Philip would cost $1.50/cu.yd. A density of 1.4 tons/cu.yd. has been used to arrive at a cost of $2.10/ton. Each ton of material removed is assumed to be replaced by a ton of fill.

(5) No mention is made in the Tricil Ltd. proposal of costs recouped from recycled ladle bottoms and iron scrap from abandoned machinery. These benefits would accrue to the City under Tricil management and would accrue to Philip Enterprises under their management.

Recommendations

(1) Based on cost, it would be advantageous to contract Tricil Ltd. to conduct the removal operation.

(2) If a delay of 2 months is unacceptable, then the work should be awarded to Philip Enterprises Inc.

Appendix 2
of Environmental Management of
Industrial Wastes on Hamilton Island

MONITORING PROGRAM DESIGN

FOR THE

FORMER LAX PROPERTY

APPENDIX 2

Monitoring Program Design for
the Former Lax Property

Purpose: To detect any serious deterioration in either the groundwater quality of the Property or in the nearshore environment which could be attributed to contamination from industrial waste deposited in the Property.

Methods:

(1) Future groundwater deterioration is one concern. Annual early summer monitoring will allow some comparison of water chemistry between years. It also leaves enough time during the ice-free season to do further testing or to implement mitigative measures if groundwater contamination becomes a problem. Until the site is further developed, the existing piezometers should be sampled once in early summer each year and analysed for the parameters in Table 1.

(2) If development proceeds, new piezometers should be installed at 4 locations, near the current piezometer sites, consistent with the design of the development. These should be monitored as above. These need not be set in industrial waste interfaces but should be representative of groundwater in the Property.

(3) At some point prior to any development, an underwater inspection should be made of the perimeter of the Property. This should determine whether there are any exposed sites of industrial waste which could be excavated during the dredging phase of construction. It should also determine whether any oil or tar, such as was found at Borehole 11, is seeping out of the site. This underwater survey could be repeated at two year intervals as part of the early summer monitoring program. Any future seepage would be then detected early enough to deal with the problem before any unsightly, potentially hazardous material becomes a major issue for the City.

(4) If development proceeds, there will almost certainly be an annual water quality monitoring program required, at least for the near future. Part of that program should include monitoring nearshore water quality to detect any major deterioration in water quality. This program would allow a determination of the amount of contamination entering the Harbour from the Property. If development does not proceed, then conditions should not change substantially from the December, 1985 monitoring. A repetition of that study could be conducted at five year intervals to ensure no major

changes have occurred. Any significant deterioration in the groundwater quality should, however, be detected by the piezometer monitoring before it reaches the nearshore environment.

(5) The Ministry of the Environment have suggested a study of the flux of groundwater reaching the nearshore water. Major anions and cations (Na, K, Mg, Ca, Cl, SO_4) should be monitored over one year, beginning once the excavation of industrial waste and regrading is complete. Comparison of levels of conservative elements will allow better estimates to be made of the impact of the groundwater from the Property on the nearshore environment.

The Ministry of the Environment and the Canada Centre for Inland Waters are currently designing part of a Remedial Action Plan (RAP) for Hamilton Harbour. As this project is an integral part of the Harbour, it may be possible to include monitoring of nearshore water quality as part of the RAP.

Table 1. Parameters to be analysed during annual groundwater monitoring

Metal contaminants:	A standard ICAP scan for 26 elements on filtered water samples will include the metals of concern, i.e., Ha, Zn, Cd, Cu, Pb, Cr.
Organic contaminants:	A test for total organic halides (TOX) and dissolved organic carbon (DOC) will demonstrate any significant increase of most of the common organic contaminants. If a substantial increase in TOX or DOC were found, further testing would then be required.
Standard parameters:	pH and conductivity should be tested routinely. Major changes in either parameter should be investigated further.

Mitigative Measures:

In the event that future evidence points to contaminants leaching from the Property into the Harbour, to the surface of the Property or into the proposed artificial lake, remedial action would be required. Potential remedies will depend on the source and the nature of the contamination and will not be discussed at length here.

The remedies may include excavation of sources of contamination,

sealing of areas with impermeable boundaries and/or altering surface drainage patterns to deflect percolation of precipitation through the site.

GLOSSARY OF TERMS

GLOSSARY

Alloy: Mixture of metals

Contaminant: Any solid, liquid, gas, odour, heat, sound, vibration, radiation or combination of any of them, resulting directly or indirectly from the activities of man which may impair the quality of the natural environment for any use that can be made of it, cause injury or damage to property or to plant or animal life, cause harm or material discomfort to any person, adversely affect the health or impair the safety of any person, or render any property or plant or animal life unfit for use by man.

Contaminated waste: Useless remains of a process which contain contaminants

Hazardous waste: Useless remains of a process which are a threat to man in the environment. MOE chemical criteria will classify waste as hazardous or non-hazardous.

Industrial waste: Any useless remains of industrial processes.

Leachate: The collected liquid after percolation through some material.

Leaching: The percolation of a liquid through some material.

Lethal: Stimulus or effect sufficient to cause death directly.

mg/kg: Milligrams per kilogram - units of measure expressing the concentration of a substance in a solid, equivalent to one part per million (ppm).

mg/L: Milligrams per litre - units of measure expressing the concentration of a substance in a solution, equivalent to one part per million (ppm).

Non-hazardous waste: Useless remains of a process which are not a threat to many in the environment.

Oxidized: Has been combined with oxygen.

Phytoxicity: Effect of a poisonous substance on plants.

Piezometer: An instrument for measuring groundwater pressure or collecting groundwater.

Sublethal: Stimulus or effect insufficient to cause death directly.

Toxicity: Effect of a poisonous substance.

Waste: Useless remains of a process.

APPENDIX 4

DREDGING AND DREDGEATE DISPOSAL

Management Plan prepared by

Booth Aquatic Research

MANAGEMENT PLAN FOR DREDGED SPOILS DISPOSAL FOR THE PROPOSED HAMILTON WATERFRONT MASTER PLAN

If approval is granted for the implementation of the proposed Waterfront Master Plan, some dredging of harbour sediments will be necessary in the lagoon area and Macassa Cove (Figure 1). The construction of the lagoon into a focal point for water recreation will require dredging to create the required depth and provide a more suitable bottom. Macassa Cove will require some dredging to provide adequate depths for boating. It is proposed to remove a total of 56,000 m^3 of sediment in the dredging activities. Booth Aquatic Research was retained to provide an environmentally acceptable management plan for the dredged spoils.

The environmental concerns which arise from a dredging project such as this are as follows:

(1) Method of dredging

(2) Safe disposal of dredged spoils

(3) Water quality of the decant water (assuming land confinement of the spoils)

(4) Water quality at the site of dredging

(5) Socio-economic impact of dredging

Each of these factors is examined below.

(1) Method of Dredging

There are varied methods which can be used to dredge bottom sediments. These include drawdown and excavation in reservoirs, some form of clamshell dredge in conjunction with a scow or land-based trucks for carrying dredgeate, and hydraulic suction dredges which pipe effluent directly to holding ponds. The situation in Macassa Cove and the Lagoon is best dredged using a small 8 or 10 inch hydraulic dredge which, although expensive, is a preferred method due to the high rates of sediment removal (Peterson 1978). The small hydraulic dredge is relatively quiet and can efficiently handle the quantities of dredgeate involved. The high water content of the contaminated sediment which must be removed from these sites is better handled by the suction of a hydraulic system than by a clamshell dredge, where spillage becomes a problem (Horstman and Copp 1984).

(2) Safe Disposal of Dredged Spoils

Classification of Dredgeate:

Sediment samples were collected from areas of proposed dredging in December, 1985 by Booth Aquatic Research (BAR) (Figure 2) to determine the appropriate disposal options following the Proposed Guidelines for Management of Dredged Material in Ontario (Ministry of the Environment (MOE) 1985).

Bottom sediments were sampled at 12 stations from areas of proposed dredging on December 18, 1985. Stations were selected as representative of the areas being dredged.

A Ponar dredge was used to collect the top 10 cm of sediments from all stations. Station 1 was sampled with a KB corer, but freezing rendered the corer inoperable for the remaining stations.

Samples were analyzed for parameters suggested by the MOE Proposed Guidelines for the Management of Dredged Material in Ontario (1985). Data recorded at the time of sampling included station depth, sample composition, colour, cohesiveness and texture. All analyses were undertaken by the Regional Laboratories of the Municipality of Hamilton-Wentworth, except for analyses of PCBs and oil and grease which were conducted by Zenon Environmental Ltd.

Results of sediment analyses are presented in Tables 1 and 2. They were then classified according to the Proposed Guidelines (MOE 1985).

All stations exceed the MOE's proposed criteria for open water disposal for the majority of parameters measured, except total phosphorus (TP), total Kjeldahl nitrogen (TKN), ammonia (NH_3), arsenic (As) and cobalt (Co) which met the open water disposal criteria (MOE 1985) (Table 2).

Several parameters exceed the proposed guidelines for restricted land use disposal (MOE 1985). The table below compares the quality of the surface sediments in Macassa Cove and the Lagoon to the restricted land use guidelines. Criteria for cadmium, mercury, zinc, chromium and selenium are exceeded. Acid leach tests were performed by the Regional Laboratories of Hamilton-Wentworth according to the MOE Guidelines (1985) on those parameters which exceeded the restricted land use guidelines. The results showed that the material should be classified as "non-hazardous waste" (Table 3).

All of the sediments sampled around the Lax Property had contaminant levels lower than or equal to mean harbour contaminant loads found by the MOE in 1980 (MOE 1985). The exception to this is mercury, which exceeds the 0.3 mg/L found by the MOE.

Table: Comparison of dredgeate quality to Restricted Land Use Guidelines (MOE 1985) and to the sediments of Windermere Basin (all values ppm). Underlined values denote failure of the Restricted Land Use criteria.

	Restricted Land Use Guidelines	Macassa Cove	Lagoon	Windermere
Table 1A Criteria:				
Cd	4	7.5	5.5	7.2
Pb	500	190	210	492
Hg	0.5	2.5	2.3	4.0
PCBs	2	0.2	0.09	3.4
Table 2B Criteria:				
As	20	8.4	11.1	8.9
Cu	100	85	102	570
Zn	500	1,370	1,440	2,544
Cr	120	135	157	1,230
Fe	350,000	29,400	41,450	NA
Ni	60	53	56	NA
Co	25	15	16	NA
Se	2	2.1	2.5	NA

Safe Disposal Site:

According to MOE Guidelines (which are not yet official policy) this material must be disposed of at an approved waste disposal site. Discussions with the Ministry have suggested that the City should apply to have a section of Hamilton Island approved as a waste disposal site on which an engineered holding facility be built. Figure 3 is adapted from the U.S. Army Corps of Engineers, Palermo (1986) showing a schematic of such a facility. In the case of Hamilton Island, the present Lagoon site of the proposed enclosed artificial lake would act as a second settling pond. Decant water would drain from the first holding pond into the Lagoon and finally into the Harbour. This allows the majority of the suspended solids to settle out prior to discharging the water back to the Harbour. Preliminary calculations have been made to estimate retention times which could be achieved using this design. These calculations are detailed below.

Assumptions:

1. 16 hour working day
2. Sediment bulking factor of 30% (factor of 1.3)
3. Sediment content of hydraulic dredge effluent of 20%
4. 10" hydraulic dredge at a capacity of 164 m^3 sediment/hr.

(3) Water quality of the decant water

The tests performed on Windermere Basin sediments (Environment Canada 1986) showed that the process of dredging did not cause contaminants in the sediments to dissolve in the supernatant water. With the possible exception of phenols, the contamination remained associated with solid phase particles. Similar investigations by Fulk, Gruber and Wullschleger (1975) showed that the amounts of organic contaminants that are dissolved into the water column during dredging are negligible and that contaminants remain associated with particles of sediment. This being the case, the quality of the decant water overflowing into the Harbour from the second settling pond (Lagoon) is dependent upon the amount of settling of suspended solids that has occurred. This will be dependent upon the retention time of the decant water in the holding pond, on the physical characteristics, including particle size distribution, of the sediments and on the morphometry of the holding and settling pond. Retention time of the decant water in the holding pond can be estimated using the same assumptions as stated previously.

Retention time in the 1st holding pond = R = Volume/Flow
Volume, V, decreases at a linear rate,
where t = days of operation
and m = rate of discharge of bulked up sediment

$$V = -mt + 86{,}700$$
$$= -(164 \times 1.3 \times 16)t + 86{,}700$$
$$= 86{,}700 - t(3{,}411)\,m^3$$

$$R = (86{,}700 - t(3{,}411))/13{,}900$$

Therefore, retention time ranges from 5 days when overflow begins on Day 5 to 1 day when the final spoils are dredged on Day 21.

Retention time of the decant water in the Lagoon can be estimated assuming a 90% retention efficiency of suspended solids.

Volume of proposed Lagoon = $45{,}000\ m^3$
Flow of decant water = $13{,}900\ m^3/day$
Sedimentation in Lagoon = $10\% \times 3{,}411\ m^3$
$= 341\ m^3/day$
$Volume = -mt + 45{,}000$
$= -341t + 45{,}000$
$R = (-341t + 45{,}000)/13{,}900$

The range of retention times in the Lagoon is from 3.1 days on Day 5 when overflow begins to 2.7 days on Day 21.

The final dredging will be that of the Lagoon itself. The existing $12{,}700\ m^3$ of sediment will be removed plus the extra

7,000 m^3 which is expected to overflow from the holding pond. This work will take approximately 6 days.

As the final dredging is from the Lagoon into the holding pond with overflow back to the Lagoon, the effective retention time during the last phase of the dredging will be greatly increased as the Lagoon volume is increased from dredging and overflow into the Harbour virtually ceases until the last day. Prior to final construction of the artificial lake in this site, the water may need to be pumped out into the Harbour and a cap of clay followed by sand used to line the bottom at the swimming site. Any chemical flocculant, such as CaOH, required to remove colloids from the Lagoon will settle to the bottom prior to final dredging of the Lagoon. This will eventually be dredged into the holding pond where it will enhance the stability of the contaminants.

Ritchie and Speakman (1973) (referred to in Patrick et al. 1977) studied the effects of settling time of dredged sediments in Fairport and Ashtabula Harbours, Ohio, on the contaminant levels in the decant water. They found a settling time of 40 hours reduced levels of Cd, Zn and Cr, which had been at toxic levels in the effluent, to less than a 1% increase over initial water concentrations. In comparison, the settling times allowed in the two pond system designed for the Hamilton situation range from a minimum of 74 hours to a maximum of 192 hours. This compares favourably wih the model developed by Palermo (1986) for predicting the quality of dredgeate effluent, where he assumes a maximum retention time of 24 hours for any settling pond. If, however, in practice the level of suspended solids in the decant water from the Lagoon is not reduced to within 10% of ambient levels, then chemical flocculation can be used in the Lagoon to remove colloidal material (Schroeder 1983).

There remains some concern regarding the mobilization of contaminants through uptake by vegetation planted on the waste disposal site and the consequent effects both on the vegetation and on the food chain. Control measures to mitigate this problems include liming the surface of the dredged spoils prior to covering them with a cap of excavated fill and topsoil. The lime minimizes the mobility of contaminants in the dredgeate, particularly in areas of poorly buffered soils. Planting should then be limited to shallow rooting shrubs and trees (Lee et al. 1982). Contouring the site to prevent ponding of precipitation runoff and to encourage drainage away from the site will minimize percolation through the cap into the dredgeate. Slowly the water in the dredgeate will leach out back to the Harbour and the site will be competely usable once more. It is estimated that this will not be for five to ten years; however, walking paths over the site can be built within a year of dredging. (It should be noted, however, that prior to decommissioning the site for use other than as a waste disposal site, approval is required fom the Ministry of the Environment under Section 45 of the Environmental Protection Act,

R.S.O. 1980, C.141,S.45.) Perforated corrugated pipes buried in the spoils have been found to increase drying rates significantly (Horstman and Copp 1984) and could be used to speed the rate of drying in the holding pond and return it to an aesthetically pleasing and usable site more quickly.

(4) Water Quality at the Site of Dredging

Studies conducted during dredging operations have shown little or no increase in soluble metal levels in overlying waters (MOE 1983; Patrick et al. 1977; Fulk et al. 1975; Windom 1973) partly due to the short exposure time of sediment to oxidized waters due to rapid sedimention of suspended solids (Patrick et al. 1977). Any metal contaminants which are distributed are associated with suspended solids. In the dredging of the Keating Channel in Toronto Harbour, for example, there were no observed far-reaching deleterious impacts due to the dredging (MOE 1980). Suspended solids quickly sedimented out and turbidity was localized only.

Sediment resuspension during dredging can be minimized by controlling operating techniques or equipment modification (Raymond 1983). Silt screens surrounding dredging operations can minimize the distribution of suspended solids if plumes of turbid water are seen emanating from the site. A screen across the mouth of Macassa Cove would be very effective at minimizing impacts of turbidity.

(3) Socio-economic Impact

Although a 10" hydraulic dredge is not a major noise generator (Joe Grossi, Environment Canada, pers. comm.), the site of the dredging is within 200 m of the residences on the bluff overlooking the Macassa Bay. It adds considerably to dredging costs to shut down on a daily basis. However, in consideration for nearby residences, we recommend working a 16 hour dredging period each day. Contractors would have to abide by Hamilton Noise Control Bylaws which limit construction noise to 7:00 a.m. to 11:00 p.m. (Noise Bylaw 2(c)(1)5).

The existing uses of Macassa Cove for marina facilities will be disrupted during the dredging operation. Scheduling the dredging so as not to coincide with peak summer sailing and boating season will limit this impact.

SUMMARY OF ENVIRONMENTAL CONSIDERATIONS

In summary, we have found that the sediments which require dredging are classified as "non-hazardous waste" according to the MOE (1985). This requires that the dredgeate be confined in a certified waste disposal site. The treatment would be to hold the dredgeate on-site while decant water flows through the holding

pond into a settling pond to remove suspended solids and finally flows back to the Harbour.

The following constraints should be observed to keep the environmental impacts of the dredging to an insignificant level.

(1) A request must be made to the Ministry of the Environment, Regional Director, for a certificate of approval for a waste management system to include the collection, processing and storage of dredged spoils (R.S.O. 1980, C.141,S.27) and to include a waste disposal site on the south site of Hamilton Island. (Similar projects have recently been approved under the Regional Director's signature in Central Region, e.g. Keating Channel: 100,000 m^3 and Whitby: 25,000 m^3 of dredgeate.)

(2) Prior to dredging, permits must be obtained to take water for dredging and for waste treatment in an industrial sewage works under Sections 20 and 24 of the Ontario Water Resources Act.

(3) A permit must be obtained under Section 45 of the Environmental Protection Act before decommissioning the certified waste disposal site (R.S.O. 1980, C.141,S.45.

(4) No significant habitat or species of aquatic flora or fauna has been observed or documented in the areas to be dredged. Small amounts of contaminants may be resuspended but are associated with suspended solids and will not be significantly mobilized by the food chain.

(5) Plumes of turbid water will be prevented from leaving Macassa Cove by a silt curtain installed across the mouth of the cove.

(6) If turbidity of the decant water flowing from the Lagoon into the Harbour, to be measured weekly by the City, lowers the Secchi depth of the Harbour by more than 10%, as per the Ontario Water Management Goals stated by the MOE, then flocculation of the suspended solids using calcium hydroxide should be considered.

(7) Dredging should be limited to 7:00 a.m. to 11:00 p.m. daily to minimize the impact of noise on the local residents.

(8) Dredging should take place in early spring or late fall to minimize interference with the local marina operations.

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APPENDIX 5

IMPACT OF NOISE AND NOISE REGULATIONS

Noise Impact Study by Hatch Associates Ltd.

The City of Hamilton Noise Control Bylaw
as it applies to the proposed waterfront

HATCH ASSOCIATES LTD. CONSULTING ENGINEERS

HATCH
ASSOCIATES

P.R.#9227.1
File#9227.2

BOOTH AQUATIC RESEARCH

June 24, 1986

Distribution

Gillian Booth - BAR

PRELIMINARY NOISE IMPACT ASSESSMENT FOR HAMILTON ISLAND

1.0 INTRODUCTION AND SUMMARY

Hamilton Island is a proposed recreational park to be built on an existing landfill site at the foot of Bay Street in Hamilton. The nearest residences are on a bluff to the east overlooking the proposed park. To the south there is a rail yard. This report will discuss the effect on the residents of noise from the park and associated roads and parking lots and the effect of noise from the rail yard on the park.

There are future plans for residential buildings to be built to the northwest near an industrial area. This report does not discuss the impact of noise on these units as at present they are only at the concept stage and it is unclear what changes may have taken place before they are built.

It is concluded that noise impact on the community can be limited to traffic noise from the waterfront road which would increase one hour equivalent sound levels by about 9 dB in the evening for houses overlooking the proposed road. With proper mitigation, concerts should produce sound levels below existing equivalent sound levels, but may still be audible at these residences.

2.0 EXPECTED IMPACT ON SURROUNDING COMMUNITY

2.1 Noise from the Park

Table 1 shows the expected impact of noise from the park on the nearest residences. It is a preliminary prediction based on the assumed scenario of a symphony concert and fairly heavy activity in the parking lot at 11:00 pm on a typical evening. Distances were scaled from the map in the Hamilton Waterfront Master Plan. Information on the vertical topography was not obtainable in the time available. Its effect was included in the prediction on the basis of qualitative observations during a site visit.

The assumed ambient conditions are taken from Table 106-2 of the MOE Model Municipal Noise Control Bylaw. The applicability of this table was confirmed by a 20 minute measurement taken on the top of the bluff overlooking the park during the late afternoon. The equivalent sound level at that time was 47 dBA.

Table 1 shows an increase of 13 dB above existing equivalent sound levels under the above conditions. Table 2 shows the effect of introducing an appropriate barrier to block sound from the concert. The concert would still be audible when traffic is less but the main impact would be from traffic in the parking lot and on the waterfront road.

It should be noted that the proposed waterfront road will be quite close to the bottom of the bluff. Thus impact from traffic will be limited to residences very close to the top of the bluff. Residences further back might occasionally hear some music, but the impact of noise is expected to be minimal.

2.2 Traffic Noise

Traffic projections are not available for this study. However, parking for 800 cars is being provided. Assuming a peak volume of 400 cars per hour along the waterfront road the Leq would be 55 dBA at 30 m (as used in Tables 1&2) . This is expected to increase the equivalent sound level by 9 dB for those houses overlooking the waterfront road.

Traffic from the park may also add to existing traffic on other streets. We understand that measures will be taken to ensure that most of the traffic uses James Street. James already produces 59 dBA at 30 m at Burlington St., according to the Hamilton Noise Control Office. Based on the above, the expected extra traffic should increase this by 1 dB. This would not be a significant increase.

2.3 Other Noise

Unusual events such as fireworks displays could generate noise sufficient to affect nearby residents. These are understood to be infrequent and could be adequately controlled by the exemption section of the Hamilton Noise Control Bylaw.

Construction noise may also affect nearby residents on a temporary basis. Some similar noise must have been generated during construction of the reclaimed land. In any case, the provisions of the Hamilton Noise Control Bylaw should adequately control this noise.

3.0 EFFECT OF RAILWAY YARD ON THE PARK

Sounds from the rail yard are quite audible on Hamilton Island, but are sufficiently intermittent that they should not interfere with conversation and other similar activities. The Leq from during one train movement was 60 dBA with an Lmax of 72 dBA. It took 2 minutes. Thus even 10 similar movements per hour would only give an Leq of 55 dBA. Activities such as concerts which could be affected by intrusive sounds should be located (as they are) on the far side of the island where the island can act as an effective barrier.

4.0 MITIGATION MEASURES

Noise from the concerts can be controlled by ensuring that the land mass of the island blocks the line of sight from the stage and all loudspeakers to the residences on top of the bluff. This may require additional grading. At this stage the drawings available for this study are too subjective to allow a quantitative analysis, but the above condition appears possible. The 10 dB attenuation assumed in Table 2 is typical of such situations and might be improved upon during detailed design.

In addition, the park could apply for an exemption under the provisions of the Hamilton Noise Control Bylaw to allow amplified music for concerts.

No mitigation of traffic noise from the waterfront road appears possible other than locating it as close to the bottom of the bluff as possible.

Because of the geometry, only a few residences actually overlook the park and are likely to be affected by noise from traffic or concerts. The number appears from the map in the Master Plan to be less than 15. If more detailed later predictions show that the impact is indeed significant for some of these houses, they could be offered central air-conditioning on a selective basis. It appears unlikely that the impact would be significant for the second row of houses.

The only other mitigation measure to protect these residents which would be feasible would be a noise barrier on the residents' property at the edge of the bluff. This would be unsightly and expensive and is not recommended.

Although noise from the rail yard would be audible at the park, it it probably intermittent enough to have little impact. Mitigation would require a wall high enough to block the view from the top of the island to the exhaust on top of the locomotives. Such a wall would be very expensive and is probably not warranted.

Tim Kelsall
Acoustics and Noise Control

TABLE 1

NOISE IMPACT WITH NO MITIGATION

RECEIVER: HOUSES ON BLUFF OVERLOOKING PARK AND PARKING LOT

SOURCE	LWA ESTIMATED	DISTANCE (metres)	BARRIER ATTENUATION	SOUND LEVEL AT RECEIVER	REF.
SYMPHONY	120	464	0	56 dBA	1
TRAFFIC	55 at 30m	46	0	53 dBA	2
VOICES	98	232	0	39 dBA	3

			NEW	58 dBA	
			EXISTING	45 dBA	4
			TOTAL	58 dBA	
			INCREASE	13 dBA	

TABLE 2

NOISE IMPACT WITH MITIGATION

RECEIVER: HOUSES ON BLUFF OVERLOOKING PARK AND PARKING LOT

SOURCE	LWA ESTIMATED	DISTANCE (metres)	BARRIER ATTENUATION	SOUND LEVEL AT RECEIVER	REF.
SYMPHONY	120	464	10	46 dBA	1
TRAFFIC	55 at 30m	46	0	53 dBA	2
VOICES	98	232	0	39 dBA	3

			NEW	54 dBA	
			EXISTING	45 dBA	4
			TOTAL	54 dBA	
			INCREASE	9 dBA	

REFERENCES

1 B&K Arch. Acoustics FIG. 1.6 *10% assumed duty factor
2 400 veh/h using CMHC prediction for waterfront road
3 50 Normal 5 Shouting voices
4 NPC 106-2 AT 11:00PM

THE CITY OF HAMILTON NOISE CONTROL BY-LAW AS IT APPLIES TO THE PROPOSED WATERFRONT DEVELOPMENT

Prepared for:

Booth Aquatic Research Group Inc.

19 March 1986

John P.M. O'Keefe
Noise Control Officer

1. INTRODUCTION

Ms. Gillian Booth of Booth Aquatic Research Group Inc. has requested the City of Hamilton Noise Control Office to provide predicted ambient noise levels in the region of the proposed Hamilton Waterfront Development. In addition, a brief synopsis of the implications of the By-law to the proposed development has been requested.

2. METHOD

2.1 Traffic Noise Estimates

Section 5(2) of NPC 133, Guidelines on Information for the Assessment of Planned Stationary Sources of Sound, in the Ministry of Environment's Model Noise Control By-law requires, among other parameters, the existing hourly equivalent sound level (Leq) of road traffic. Noise due to road traffic was estimated according to the procedure outlined in NPC 106 of the Model By-law. This is the same procedure incorporated in the City of Hamilton's Noise Control By-law No. 79-292.

Traffic noise was estimated at the following locations:

* Burlington St. & James St.
* Burlington St. & John St.
* Bay St. & Stuart St.
* Bay St. between Strachan & Stuart
* James St. on the CNR Bridge
* Strachan St. between MacNab & James
* MacNab St. between Strachan & Stuart

Traffic counts were taken from Traffic Department records. The locations noted above represent the complete database for this area currently available to the Traffic Department.

In estimating the traffic noise the following assumptions were made:

(i) speed limits within the range of 50-65 kph
(ii) distance from observation point to the centre of the road is 30 m
(iii) road gradient less than or equal to 1%
(iv) no stop signs or traffic lights within 60 m of the observation point
(v) for the last four locations noted above the percentage of vehicles larger than vans or pickups was arbitrarily assumed to be 2%

All these assumptions are appropriate to the area of the city in question.

2.2 Implications of the By-law 79-292 to Proposed Development

The Hamilton Waterfront Study, Master Plan (Coombes Kirkland Berridge Inc., September 1985) was reviewed with the application of the Noise Control By-law in mind. The following potential noise sources were indicated:

* Open air concerts, theatre and music theatre
* Fireworks displays
* Festivals, etc.
* Normal operation of electrical and mechanical equipment

3. RESULTS

3.1 Traffic Noise Estimates

Estimated traffic noise levels are listed below in Table 1 and are shown in Figure 1.

Table 1
Estimated Traffic Noise Levels

Observer Location	Leq (dBA)
Burlington St. & James St.	59o
Burlington St. & John St.	54o
Bay St. & Stuart St.	58†
Bay St. between Strachan & Stuart	61
James St. on the CNR Bridge	54
Strachan between MacNab & James	53
MacNab between Strachan & Stuart	62

nb. o indicates the location south of the intersection
† indicates the location north of the intersection

3.2 Implications of By-law 79-292 to the Proposed Development

3.2.1 Potential Violations

The Noise Control By-law only pertains to Residential Areas. Generally speaking, any noise that exceeds the normal background level is in violation of By-law 79-292, specifically Section 2(1)(a). Any concerts or theatrical performances, with or without the aid of Public Address (PA) Systems, could be in violation of the By-law. If the noise was created without a PA system, a violation would have to be measured by a Noise Control Officer. If, how-

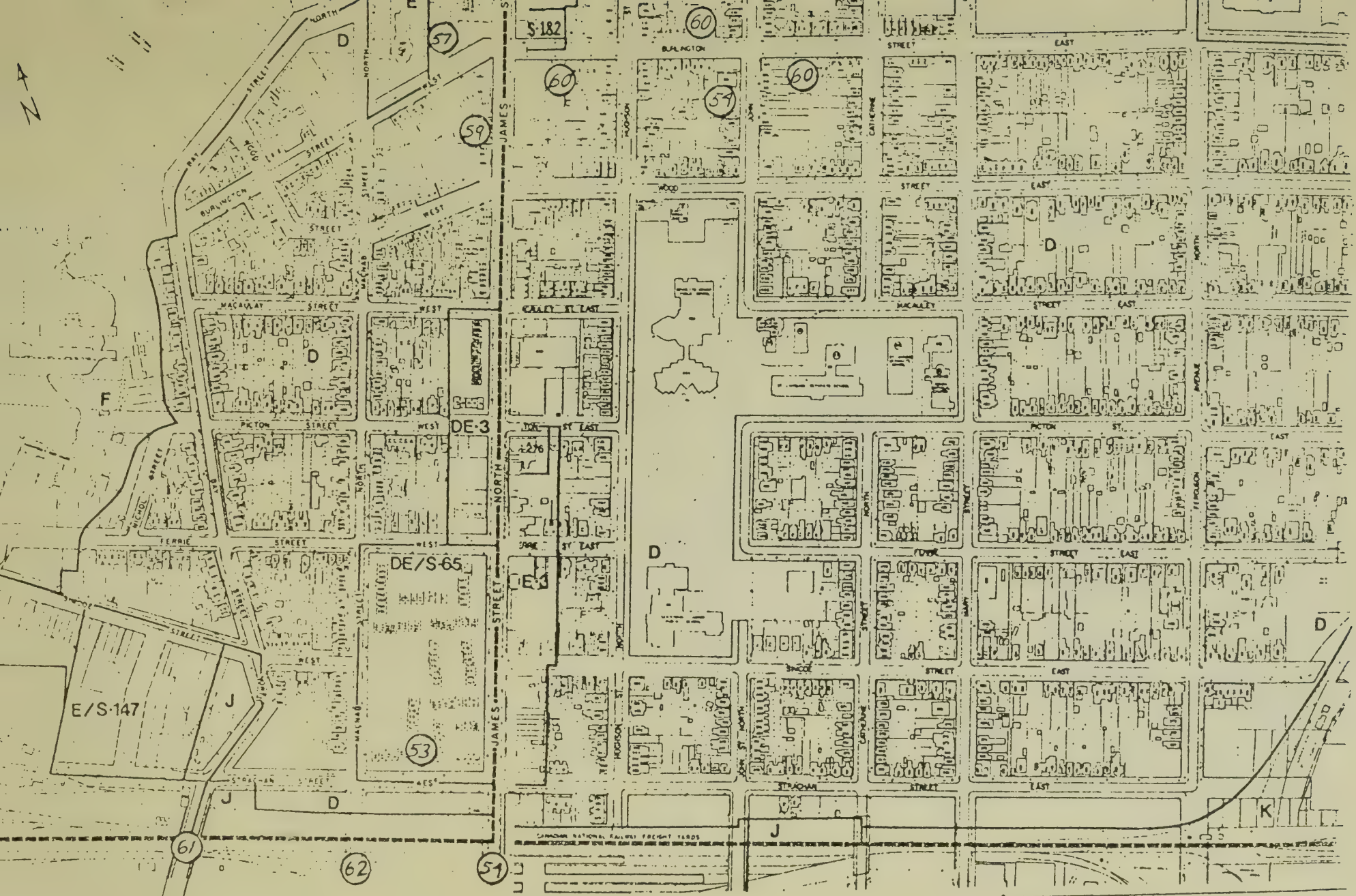


Figure 1
Predicted Equivalent Sound Levels

ever, a PA system was in use and was heard in a Residential Area between 11:00 p.m. and 7:00 a.m. then no such measurements would be required, witnesses testimony would be sufficient for application of the By-law. After hours violations of this sort are covered in Section 2(1)(c) of the By-law. A list of the Section 2(1)(c) prohibitions may be found in Appendix A of this report.

Fireworks displays would similarly be covered under Sections 2(1)(a) and 2(1)(c) of the By-law, the latter categorically prohibiting the detonation of fireworks or explosive devices between 11:00 p.m. and 7:00 a.m. Outside these hours Section 2(1)(a) would come into effect prohibiting any noise beyond the normal background level.

Noise created by festivals or other similar events may also fall within the jurisdiction of Sections 2(1)(a) or 2(1)(c). Such events could, however, be exempted from the By-law. This will be discussed in the following section.

The normal operation of mechanical and electrical equipment would most likely be covered under the general provision of Section 2(1)(a). Such equipment should not, therefore, exceed the existing background noise levels (see Table 1).

3.2.2 Exemptions

Appendix B shows an extract from the present Noise Control By-law detailing the festivals and events that are exempt from its jurisdiction. This list could most certainly be updated to encompass similar events at the proposed development site. Such amendments to the By-law are the responsibility of City Council.

In addition, a person or persons may apply to Council for a incidental exemption from the By-law. Such exemptions are meant to cover non-recurring events such as construction, tree removal, etc.

4. CONCLUSIONS

Estimated traffic noise levels have been presented. These levels are only for present volumes of traffic, forecast volumes were not available. Possible implications of the Noise Control By-law on the proposed development have been summarized as have the typical exemptions that might apply.

SCHEDULE 3

(Section 2(1)(c))

PROHIBITIONS BY TIME AND PLACE

PART I

	Prohibited Period of Time	
	Quiet Zone	Residential Area
he operation of any auditory signalling evice, including but not limited to the inging of bells or gongs and the blowing f horns or sirens or whistles, or the roduction, reproduction or amplification of ny similar sounds by electronic means except here required or authorized by-law or in ccordance with good safety practices.	at any time	11:00 p.m. to 7:00 a.m.
he operation of any electronic device or roup of connected electronic devices ncorporating one or more loudspeakers or ther electro-mechanical transducers, and ntended for the production, reproduction r amplification of sound.	at any time	11:00 p.m. to 7:00 a.m.
il selling or advertising by shouting ut-cry or amplified sound.	at any time	9:00 p.m. to 7:00 a.m.
oading, unloading, delivering, packing, npacking, or otherwise handling any con-ainers, produce, materials, or refuse natsoever, unless necessary for the main-enance of essential services.	11:00 p.m. to 7:00 a.m.	11:00 p.m. to 7:00 a.m.
he operation of any construction equipment n connection with construction	7:00 p.m. to 7:00 a.m.	11:00 p.m. to 7:00 a.m.
he detonation of fireworks or explosive evices.	at any time	11:00 p.m. to 7:00 a.m.
he operation of a combustion engine which, i) is, or ii) is used in, or iii) is intended for use in, toy or a model or replica of a larger evice, which model or replica has no unction other than amusement and which is ot a conveyance.	at any time	11:00 p.m. to 7:00 a.m.
he operation of any powered rail car inclu-ing but not limited to refrigeration cars, ocomotives or self-propelled passenger cars, hile stationary on property not owned or ontrolled by a railway governed by The anada Railway Act.	at any time	11:00 p.m. to 7:00 a.m.
he operation of any motorized conveyance ther than on a highway or other place ntended for its operation.	at any time	11:00 p.m. to 7:00 a.m.
he venting, release or pressure relief of ir, steam or other gaseous material, roduct or compound from any autoclave, oiler, pressure vessel, pipe, valve, achine, device or system.	at any time	11:00 p.m. to 7:00 a.m.

Schedule 3 - continued

		Prohibited Period of Time	
		Quiet Zone	Residential Area
11.	Persistent barking, calling or whining or other similar persistent noise making by any domestic pet.	at any time	11:00 p.m. to 7:00 a.m.
12.	The operation of any powered or non-powered tool for domestic purposes other than snow removal.	9:00 p.m. to 9:00 a.m.	11:00 p.m. to 7:00 a.m.
13.	The operation of solid waste bulk lift or refuse compacting equipment.	5:00 p.m. to 7:00 a.m.	11:00 p.m. to 7:00 a.m.
		All day Sunday, Statutory Holidays and Civic Holidays	
14.	The operation of commercial car wash with air drying equipment.	7:00 p.m. to 7:00 a.m.	7:00 p.m. to 7:00 a.m.
15.	The operation of a power assisted hang glider or a parafoil.	at any time	9:00 p.m. to 9:00 a.m.
16.	The operation of any item of snow making equipment.		
17.	The operation of a sound emitting pest control device.		

PART II

1. For the purpose of this schedule, "motorized conveyance" includes,

   (a) Snowmobiles;
   (b) mopeds;
   (c) go-carts;
   (d) track bikes;
   (e) trail bikes.

SCHEDULE 6

(Section 6)

TRADITIONAL, FESTIVE, RELIGIOUS and OTHER ACTIVITIES EXEMPTED

1. Ivor Wynne Stadium Events
2. Gage Park Concerts
3. City Hall Concerts
4. Festival of Friends
5. New Years Celebrations
6. Victoria Day Celebrations
7. It's Your Bag Day.

APPENDIX 6

ARTIFICIAL LAKE STUDY

Report prepared by

Booth Aquatic Research

and Berridge Lewinberg Inc.

HAMILTON HARBOUR DEVELOPMENT

ARTIFICIAL LAKE STUDY

The development of urban waterfront property has rejuvenated the downtown core of many cities along the Great Lakes. As the cities become more densely populated, the residents prefer to migrate to the cool, green areas along waterfront that metropolitan parks departments have converted from former industrial sites. Unfortunately, although the water looks cool and inviting, too often in these situations water quality is too poor to provide safe recreational use. The development of the former Lax Property by the City of Hamilton is likely to follow this scenario unless some measures can be taken to provide consistently safe water quality for swimming.

Booth Aquatic Research has contacted several agencies who have had experience with treating large volumes of water to provide safe swimming areas. The Hamilton Region Conservation Authority pioneered the use of impermeable curtains in Ontario. The first curtain was employed at Valens Conservation Area in 1973. A 210 metre curtain was used to cordon off an area of beach to produce a 1.2 ha swimming area. The water volume of 4.8×10^6 litres inside the curtain was then treated with chlorine to maintain acceptable water quality for swimming purposes. Surveys by the Conservation Authority, the Ministry of the Environment and the Regional Health Unit all indicated successful treatment of the swimming area with no harmful effects on the biota in the reservoir. More recently, the Authority installed a curtain at Christie Conservation Area. Other Conservation Authorities have also begun to install curtains, e.g. Metropolitan Toronto & Region Conservation Authority at Mill Pond and the Niagara Peninsula Conservation Authority at Brimbrooke. The use of curtains and chlorination is now recognized as a safe means of controlling bacterial levels in the water to provide pleasant and enjoyable conditions for swimming.

As a result of our discussions with Conservation Authority personnel, as well as with officials from the Ministry of Health and the Ministry of the Environment, we recommend that the following design criteria be implemented in the development of the former Lax Property:

(1) A completely enclosed water body be created by closing off the extended arms of the property and excavating a central basin in place of the embayment which was originally designed to be open to Hamilton Harbour.

(2) The construction of the islands to enclose the bay will commence with rock berms to contain the fill to follow. This will minimize turbidity.

(3) Positive outward water pressure in the artificial lake should be maintained by raising the level of the artificial lake above that of the maximum level of Hamilton Harbour. In combination with a relatively impervious 1 metre clay liner, this should ensure little infiltration of either harbour water or groundwater to the enclosed waterbody.

(4) The water in the artificial lake will need to be circulated to avoid stagnation and threat of winter kill of fish. We would suggest passive means such as wind or solar-powered pumps.

(5) A water main from the City should be used as a means of flushing and filling the artificial lake. The main must have backflow protection to avoid the possibility of water from the artificial lake entering the city's water system. An estimated 33×10^6 litres of water will be required to fill the artificial lake and augmentation may be as high as 0.5×10^6 litres/day to ensure high water quality.

(6) A swimming area can be created in one portion of the artificial lake by using an impervious curtain, such as is now in use at several Ontario beaches, to separate the artificial lake water from water in the swimming area:

a) Water in the swimming area will need to be treated with chlorine to meet Provincial Water Quality Objectives (i.e. MOE Blue Book) for swimming beaches. The pumping and treatment plant should not be located in the immediate area of the beach in order to decrease any risk of chlorine gas leakage endangering the public. Chlorine outlets in the swimming area will be properly spaced to provide optimal treatment coverage.

b) Any contaminated soil in the beach area must be removed and the remaining sediment sealed with clay.

c) The beach could consist of pea gravel rather than sand to improve water quality and clarity.

d) To decrease the influx of bacteria and contaminants, drainage from the immediate vicinity will have to be directed away from the swimming area into the storm sewer system by use of drainage tiles and landscaping features.

e) The depth of water at the curtain should not exceed 1.8 metres and a children's area should be buoyed off within the swimming area.

f) Shower facilities and changing rooms will need to be located adjacent to the swimming area.

g) Regional Health officers, as well as the supervisory beach staff should monitor coliform levels to ensure high water quality at all times.

(7) The area outside of the swimming area must be posted as "No swimming", but canoeing and paddleboating will be allowed.

(8) Shoreline fishing by youngsters should be encouraged and pan fish could be stocked, if necessary, to sustain the fishery. Littoral zone could be created by bottom filling.

(9) The area will need to be landscaped to discourage extensive use by birds.

Attached is an architectural concept of the proposed area. This proposal offers the advantages of:

(i) creating ideal, safe swimming conditions

(ii) allowing water-based recreation outside the swimming area, with no interference with swimmers

(iii) allowing suitable water quality to support a small fishery for pan fish

(iv) allowing an extended swimming season due to the warming effect of enclosure

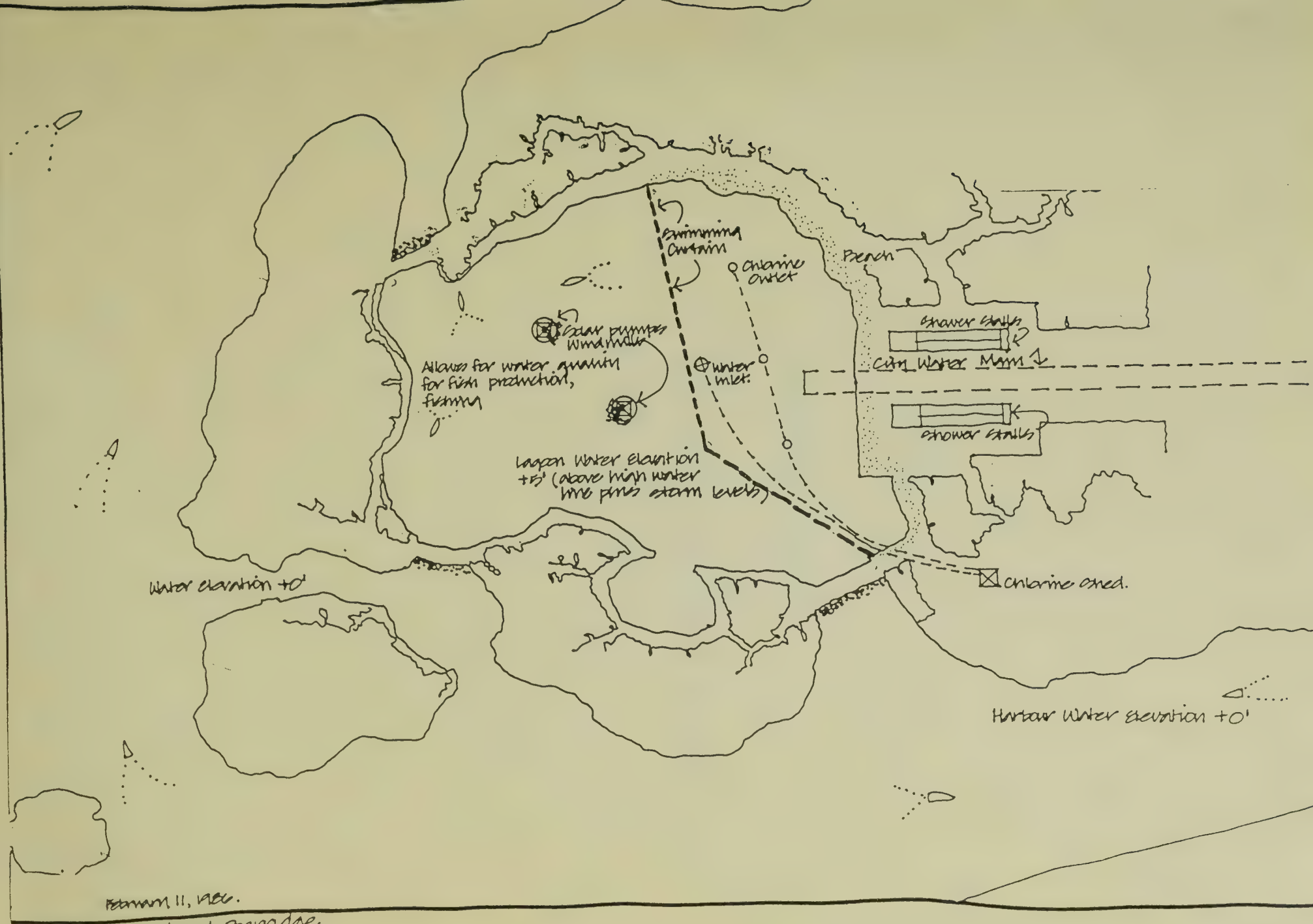
The disadvantages are:

(i) the construction and maintenance will be more costly than the open artificial lake

(ii) life guards must be on site at all times when the swimming area is open

(iii) the installation and removal of the curtain for annual maintenance is time-consuming

As this concept has proven successful by the experiences of several Conservation Authorities, it appears to be an appropriate design for the development planned at the Hamilton Waterfront.



February 11, 1986.

Coombes, Kirkland, Bermuda

APPENDIX 7

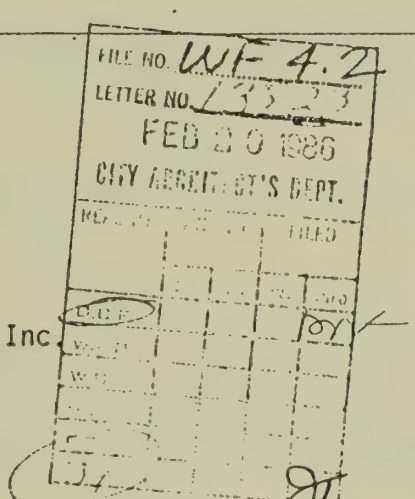
NEIGHBOURHOOD IMPACTS

Report prepared by the
City of Hamilton Planning & Development Department

Report prepared by
Berridge Lewinberg Inc.

THE REGIONAL MUNICIPALITY OF HAMILTON-WENTWORTH

Planning and Development Department
71 Main Street West, Hamilton, Ontario L8N 3T4



Refer to File No. P5-2-106
Attention of
Your File No.

February 19, 1986

Ms. Gillian Booth
Booth Aquatic Research Group Inc.
532 Queen Street East
Toronto, Ontario
M5A 1V2

Dear Ms. Booth:

Re: Hamilton Waterfront Master Plan Environmental Assessment
Application for an Exemption Order

Enclosed is a brief report addressing the planning and socio-economic issues raised in your letter of January 24, 1986 for the A.E.O.

You will see that the coverage of issues is quite superficial and general. The report is presented very much from the neighbourhood planning perspective and from my experience in working with the neighbourhood advisory committee on the draft Secondary Plan.

I mentioned to you in our discussions that I did not feel qualified to provide a more definitive assessment of the socio-economic impacts of the Waterfront Plan. I have also been constrained by other priorities and commitments. Finally, I was unsure of the form this submission should take, the degree of detail and the appropriate style and format.

Following your review, I am prepared to fine-tune and elaborate where necessary but, as indicated, I don't believe I can provide a more definitive assessment of the socio-economic impacts.

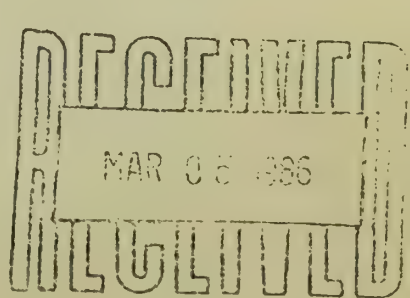
Please contact me at 526-4148 if you have questions or wish to discuss this further.

Yours truly,

R Campbell.

Rosemary Campbell, M.C.I.P.
Planning and Development Department

RC:jd
Encl.
cc: Jayne Tollefsen



HAMILTON WATERFRONT MASTER PLAN

SOCIO-ECONOMIC AND PLANNING IMPACTS

Three studies are attached as background information to this report. The North End Waterfront Secondary Plan Background Information 1983 provides a description of the North End area, its history, topography, land uses, planning controls and transportation network.

The Community Profile, North End East and West Planning Neighbourhoods, 1983 provides a general socio-economic description of the North End East and West planning neighbourhoods.

The draft North End Waterfront Secondary Plan, 1984 provides the neighbourhood planning policy framework as developed by a neighbourhood advisory committee in anticipation of the Waterfront Master Plan. One of the main purposes of the plan was to ensure that development of the Waterfront would be in harmony with the North End community. The advisory committee worked with the Planning Department and other agencies to:

i) discuss desired waterfront development

ii) identify existing and future problems which may arise from the development of the waterfront

iii) identify the needs of the local residents

iv) exchange information and ideas, and

v) develop a proposed secondary plan.

The North End Waterfront Secondary Plan has been adopted by the North End advisory committee but not by the City.

With the above-noted background information and policies as a basis, each of the following topics is addressed.

1. Conflict of the Waterfront project with the environmental goals, objectives, plans, standards, criteria or guidelines adopted by the community where the project is to be located

   When the neighbourhood advisory committee was discussing the waterfront project, the principal concerns raised were noise, activities and traffic, and the impacts these would have on the residential area as it exists today. The Secondary Plan, therefore, recommnds that high intensity recreational uses and activities which would create the greatest degree of noise, generate heavy traffic and be most in conflict with the neighbourhood should be located on the Harbour Commissioners lands at Pier 8. Pier 8 is removed from the residential area and has ready access via main roads such as James, Burlington and Wellington.

The Plan stated that medium intensity residential uses should be located on the Lax lands which are also removed from the residential area because they extend westwards below the bank where residents live. The Secondary Plan recommended that low intensity recreational uses be located on Pier 4 and adjacent lands, because these lands are in very close proximity to the residential area.

The Waterfront Plan has followed these recommendations to some degree; however, because the Harbour Commissioners lands on Pier 8 are not available for development at this time, high intensity recreational uses are being located on the Lax lands. Location of structures and activities on the Lax lands is taking into account the neighbourhood to the east and attempts are being made to minimize impacts such as directing the amphitheatre stage away from the residential area.

A significant exception is the plan to locate an access road and parking areas at the foot of the slope separating the waterfront lands and the neighbourhood.

The road will bisect Pier 4 Park as it extends from Guise Street in the north to Simcoe Street in the south. The purpose of the road is to provide access to the main waterfront parking area particularly for those arriving and departing from the east. It is intended that this route will avoid the necessity for drivers to filter through the neighbourhood. The neighbourhood advisory committee also addressed this issue. It was their recommendation that a series of one-way streets in the neighbourhood particularly on Bay and Burlington would force through traffic or traffic destined for the waterfront to use the main routes such as James and Wellington. By upgrading Strachan Street, ready access would be provided from the east via this route to the waterfront entrance at Simcoe Street. The committee and neighbourhood planning staff strongly felt that a shore road at the foot of the slope would effectively separate the neighbourhood from the waterfront park uses particularly at Pier 4 Park and defeat the purpose of making Pier 4 Park a quiet, passive open space area.

The Secondary Plan recommends combining Bayview Park on the top of the bank with Pier 4 Park below the bank. A new road between these two open space areas would also defeat the purpose of combining the two parks. In addition, residents felt that the shore road and associated parking would create noise and other conflicts that would directly affect them. The committee felt that the negative impacts of the shore road outweighed the benefits. They felt that a new traffic system could be devised for the neighbourhood using existing streets that would achieve the same results of diverting through traffic and providing easy access from the east to the waterfront activity areas. It was not considered appropriate to introduce a potential conflict in the form of a new road into the low intensity activity area to be created at Pier 4 Park.

It should be noted that a North End traffic study is underway which will address the most appropriate waterfront access options including the shore road.

2. Effects of the Waterfront project on adjacent persons or property, or persons or property not associated with the undertaking

If this question is taken at face value, it is obvious that the Waterfront project will affect adjacent persons and property. The activities and uses planned for the waterfront area will create noise, alter views, increase traffic and generally make the area more lively and vibrant. Depending on one's point of view, this can be a benefit or disbenefit. Attempts have been made in the Waterfront Plan to minimize the negative impacts on adjacent persons and property. Some change will be inevitable and as the project proceeds, the implementors should be very sensitive to effects on adjacent persons or property and be able to adjust the project when appropriate.

3. Irreversible commitment of any significant amount of non-renewable resources

The loss of the Lax lands as unusable open space and the transformation of Pier 4 Park to more attractive park space is not considered to be significant. The Waterfront project will open up these lands to a population group that may not even be aware what exists there at present.

4. Pre-emption of the use, or potential use, of a significant natural resource for any other purpose

The Waterfront lands as they now exist are not considered to be a significant natural resource that will be missed if they are developed.

5. The Waterfront project as a pre-condition to the implementation of another undertaking

This cannot be determined at the present time.

6. Generation of secondary effects (e.g. land development, population growth) likely to significantly affect the environment

The North End neighbourhoods are already becoming a desirable place to live. The combination of relatively low house prices, proximity to the waterfront, quiet character of the area, proximity to the downtown and availability of services such as schools make the area attractive. Gentrification is already taking place to some degree. The Waterfront project will stimulate this change. In the long term, it is likely that property values will rise, house prices will increase, pressure for more intense residential development and changes in land use towards commercial will occur. These changes are not expected to significantly affect the environment.

7. Blocking of views or adverse effect on the aesthetic image of the surrounding area

As indicated previously, the North End neighbourhoods are quiet residential areas, while the waterfront lands are primarily natural, open areas with few activities. Development of the waterfront lands, as proposed, will change views and change the aesthetics of the area. These are not considered to be negative or adverse effects.

8. Change to the social structure or demographic characteristics of the surrounding neighbourhood or community

The Community Profile, North End East and West Planning Neighbourhoods, 1983 shows the socio-economic character of the neighbourhoods as of 1982.

The Waterfront project, as it evolves, will alter the socio-economic profile of the neighbourhood. Change is already taking place as a result of the publicity surrounding the Waterfront Plan and the fact that considerable public investment has gone into purchasing lands, and preparing the Plan, and will go into developing the project.

It is likely that the population will increase as more people including young families with children, or likely to expect children, move into the area and residential intensification occurs.

The composition of the population is likely to change from the present relatively low proportions of working people and seniors to higher proportions of working people.

Average family income is likely to increase as more affluent people desiring proximity to the waterfront move into the area displacing lower income groups. 'Blue-collar' workers will be replaced by 'white-collar' workers wth higher educational levels. With this change will come less dependence on the traditional social services.

9. Overtaxing of existing community services.

The Waterfront project is not anticipated to overtax existing community services.

10. Overtaxing of existing facilities (e.g. transportation, schools, parks).

The Waterfront project has been carefully planned for and therefore should not overtax existing facilities, except for the existing transportation system. As previously mentioned, a traffic study is underway which will examine alternatives and recommend the most appropriate actions to deal with the increases in traffic expected when the Waterfront project is operational.

11. Controversy

In our opinion, the controversy generated by the Waterfront project has been considered and dealt with in the planning stages. Most major concerns have been incorporated into the plan, with the exception of the road issue which is still under study.

12. Road Widening Effects

No major road widenings are planned at this time to accommodate traffic volume. The only roads where widening may occur are Strachan Street and Guise Street. A considerable number of homes on Strachan have already been purchased and removed by the Region in anticipation of the proposed Perimeter Industrial Road. Widening of Guise Street is dependent on installation of the shore road which is an issue to be considered in the traffic study.

The principal access roads to the waterfront from the south are Bay, James and John. No road widenings are anticipated on these streets. James Street from King to the CNR tracks is under study as a heritage district. The heritage streetscape on this street will take precedence over any traffic alterations.

13. Effect on Existing Plans

Official Plan comments have been provided under separate cover. The draft Secondary Plan has been covered in 1. previously.

14. Streetscapes and Linkages

Attractive entry routes and appropriate streetscapes are important to the success of the Waterfront project. They will help to create a good impression and encourage out-of-town visitors to see the rest of the city.

Bay Street, which will be the primary entry route from the south, would benefit from a considerable expenditure on streetscaping and beautification.

James Street, between King and the CNR, is already slated for a streetscaping program as a result of the heritage study.

The Planning and Development Department is planning an extensive study of downtown-to-waterfront connections in an effort to provide appropriate linkages between these two major activity centres.

RC:jd
W.P. 0054P

Berridge Associates Incorporated

RECEIVED
MAR 2 1 1986

March 24, 1986

Ms. Gillian Booth
Booth Aquatic Research Group Inc.
532 Queen St. E.
Toronto, Ontario
M5A 1V2

Dear Ms. Booth,

Re: Hamilton Waterfront Master Plan Environmental Assessments Application for an Exemption Order

I am writing to you in response to your request for my comments on the broader community and regional impact of the Hamilton Waterfront Master Plan.

I have structured these comments in accordance with the headings employed in your letter. I have also had an opportunity to review the letter of February 19, 1986 from Rosemary Campbell, Planning and Development Department, Regional Municipality of Hamilton-Wentworth. Since my focus is on a somewhat wider area but still incorporates the immediate local community she reviewed, I have not repeated any of her points where I am in essential agreement.

1. Conflict of the Waterfront project with the environmental goals, objectives, plans, standards, criteria or guidelines adopted by the community where the project is located.

I have received the various planning documents applicable to the site, as requested in the draft North End Waterfront Secondary Plan, to assess the degree of conflict or conformity with adopted policies.

a) City of Hamilton Official Plan.

The City of Hamilton Official Plan sets out policies for the use of land within the area covered by the Waterfront Master Plan.

The waterfront area is designated Open Space. However, the Lax property and surrounding waterlots were deferred for further consideration under Section 14(3) of The Planning Act.

133 Richmond Street West, Toronto, Canada M5H 2L3 (416) 363-9004

storage facilities, and commercial uses such as, seafood restaurants, cafes, and other small-scale commercial uses that architecturally enhance and encourage public attraction to the waterfront area.

b) Design Plan for Waterfront

The Official Plan envisaged the production of a document similar to Waterfront Master Plan being created to guide actual development of the waterfront.

When development is proposed in the area, Council will require a Design Plan for the entire Special Policy Area showing the permitted uses, public space, the traffic system, pedestrian walkways, protection of the natural features of the area, and assurance of privacy for adjacent residents. The Design Plan will be adopted by Council after consultation with area property owners.

A Development Report is also required explaining the reasoning behind the proposal and how it is feasible and desirable.

A site plan is required as well showing buildings and open space. The policies specifically mention regulation of building heights to protect existing views of the Harbour from adjacent residential properties.

c) The Central Area Plan

The Central Area Plan was adopted by City Council on January 13, 1981. It provides a land use guide for the Central Area of the City at a greater level of detail than the Official Plan (Map 10). The Central Area extends from the Bay to the Escarpment and from Queen Street to Victoria Street. The North End Waterfront Area is entirely included within the Central Area.

The Central Area land use strategy designates the waterfront area as Parks and Open Space and the interior as Neighborhood Residential. Policies in the Plan indicate that the amount of park space in the Central Area should be greatly increased through priority development of neighborhood parks and the designation and development of special park ares along the waterfront, as shown on the Land Use Plan.

The land use designation for this area and the relevant policies have now been referred to the Ontario Municipal Board by the Minister of Housing at the request of the Lax Brothers.

The Open Space designation generally permits parks, recreation areas, pedestrian pathways, and hazard lands. Limited commercial uses, which are ancillary to and support the primary Open Space use, are also permitted.

Specific policies are included in the Official Plan in reference to Open Space in the vicinity of Hamilton Harbour.
These are:

In areas designated OPEN SPACE in the vicinity of Hamilton Harbour, Council, where feasible and desirable, will:

i) Recognize recreation as a significant re-emerging use of the Harbour;

ii) Establish or acquire the western harbour for predominantly OPEN SPACE and recreation purposes;

iii) Ensure that establishment of marina facilities will be in areas with sufficient access, back-up space, proximity to suitable waters, and which require a minimum of landfill;

iv) Co-operate with the Hamilton Harbour Commissioners, Hamilton and Halton Regional Conservation Authorities, Provincial Ministries, the City of Burlington and others, in their efforts to establish recreational facilities and a functional OPEN SPACE network and to establish the carrying capacity of the Harbour for additional marina facilities;

v) Acquire or establish access corridors and/or scenic linear easements to ensure public access to the Harbour; and,

vi) Have regard for the provisions of Subsection A.2.5 (Open Water), in addition to the provisions of Special Policy Areas 2, 5, and 10, as set out in Subsection A.2.9.

The waterfront lands within the North End are further designated as Special Policy Area 5 in the Official Plan (Map 9). Within this area, various water-oriented uses are permitted and encouraged such as marinas, related clubhouses, maintenance, repair and

Two specific policies are addressed to the waterfront:

* The waterfront area will receive particular attention from park/open space development. In this location, park design and facilities will take maximum advantage of the setting available and the benefits accruing to residents of the Central Area and City. In this regard, pedestrian and bicycle linkage to Dundurn Park to the west will be explored; and,

* The attraction of the Bay as a recreational resource will be enhanced.

  Implementation will be through Council support for ways and means to improve the water quality so that the Bay is a pleasant place to canoe, sail, row, swim, fish or view from land or water, for all users. The adequacy of engineering services in the Central Area will be carefully examined as a means to improve the Bay's water quality.

d) North End Waterfront Secondary Plan

The North End Waterfront Secondary Plan, prepared as a part of an extensive community participation process in 1984, states a number of goals for the waterfront area. This plan has however not yet been presented to the Planning and Development Committee or to City Council. Those goals are described below.

* The core of the Neighbourhood (east of Bay, south of Burlington) will be affected as little as possible by waterfront uses and activities.

* The waterfront area will serve a variety of levels in the recreational hierarchy - Regional, City, community, and neighbourhood. However, not all activity levels will be accommodated in the entire area. Rather, contemplative, active, mixed commercial/recreational and other uses will be spread and separated over the area.

* The emphasis in the waterfront area will be on recreational use and activity, with limited commercial and residential uses added in appropriate locations to enhance the recreational character and enjoyment of the areas.

* A mix of uses, residential, commercial and recreational will be encouraged in appropriate areas of the waterfront and adjacent lands.

* Uses conflicting with or detracting from the primary recreational character of the waterfront will be removed or phased out early in the process to show clearly the direction the waterfront is taking.

* Ramifications of new uses introduced to the waterfront area will be carefully studied and analyzed to minimize conflicts such as traffic, parking, noise, etc. on the residential area. Where possible, the waterfront should operate as a self-contained entity that does not create spill-over effects on the neighbourhood.

* Uses proposed for the waterfront will be realistic and practical in terms of cost, interest, and marketability.

* The waterfront secondary plan should have short-term and long-term goals and a development continuum so that a logical progression of activity and growth will evolve over the years. Transitional uses are encouraged but attempts should be made to minimize conflict both with existing and future uses.

* Design consideration and features are extremely important in the waterfront area which will become Hamilton's window on the water. All building and structures will be integrated, related, and complementary with each other, with the natural features of the area, and with the overall goals and objectives for the area. This principle is key and should not be altered, softened, or ignored.

* There will be a balance between the activities proposed for the waterfront area. No one use or activity should overwhelm or submerge others.

* Where possible, existing uses or plans will be combined, connected, or programmed for such as the marine proposal of the Hamilton Harbour Commission linking Eastwood Park, along Guise Street to Bayview Park.

* All green and open spaces will be linked in imaginative and interesting ways. In addition, the waterfront will be linked to open space outside the area to provide bicycle, pedestrian, and recreational access into and out of the area.

* The history of the area will be maintained through use of themes, names, retention of certain buildings and areas, and treatment of development.

e) Conclusions

All of the planning documentation recognizes the importance of developing Hamilton's Waterfront, regarding it as a major urban recreational opportunity. It is also recognized that this potential resource is to serve many communities, regional, city and neighbourhood. It is significant in this regard that this section of the waterfront is included in the Central Area, indicating the importance of the area to the ongoing and highly successful policy of revitalizing Hamilton's central business district.

This planning documentation also recognizes the existence of a local residential community in the North End immediately adjacent to the waterfront and the need to protect this community in the face of pressures from the development of the waterfront for use by those from other areas of the city and region. The Waterfront Master Plan proposed conforms to the objectives and details of those policies to a remarkable degree.

2. Effects of the Waterfront Project on adjacent persons or property not associated with the undertaking.

As noted, the planning documentation details the need to be concerned about the privacy of the adjacent neighbourhood in the event of waterfront development and to minimize the impact of any noise, parking or traffic impact generated by that development.

The proposed waterfront master plan takes considerable care to ensure that these impacts are minimized.

a) Privacy

The Waterfront Master Plan identifies different use and activity areas for various parts of the site. Part of the rationale behind this site zoning was to minimize the impact of the adjacent neighbourhood. The section of the Waterfront immediately west of the North End is primarily to be used for yacht club and marina uses, as it is today, although on an expanded scale. More active and popular uses have been located further into Hamilton Island. While the area will undoubtedly become more active and popular, most such activity will be focused away from the existing neighbourhood and should not have a detrimental effect on its privacy.

b) Noise

I understand that a noise impact study is underway. However, in the initial planning of the waterfront, attempts were made to reduce the effect of site generated noise by locating noisier activities, like the bandshell,and the swimming area further into the Island and orienting them away from the development.

The main entrance to the Island is located at some distance from the neighbourhood, again as an attempt to reduce noise impact.

c) Parking and Traffic

Successful resolution of the parking and traffic issues is critical to the operation of the Waterfront Master Plan. While the North End traffic study now in preparation will address these issues in detail it is worth restating the reasons behind the parking and traffic strategy employed.

Recognizing that the increased use of the waterfront would require additional parking, new parking areas were created to service this demand. The primary new parking area is located to be accessed from Bay Street without entering the North End neighbourhood. Other smaller lots are proposed within the waterfront to service specific yacht club or marina uses. Parking is generally sized to service normal waterfront use levels. More extreme demands generated by festivals or major events would have to rely to a significant extent on public transportation.

The proposed traffic plan is intended to service the waterfront and divert traffic away from the North End neigbourhood. Since it is anticipated that much of

the traffic will be originating from the region, clear routes to the waterfront along major arterial roads are essential.

The plan proposes the direct connection of Bay Street at Simcoe Street to Guise Street/Leander Drive in order to facilitate access to the major parking area from all directions. Without this link traffic from the east in particular would be required to filter through the North End from Burlington Street to this parking area.

Provision of this continuous waterfront drive will also facilitate traffic movement within the site and casual vehicular visitation, again without necessitating returning through the North End.

d) Conclusion

The development of the waterfront will increase the level of activity in the adjacent neighbourhood. It would seem that this higher level can however be achieved without overly negative impact on the privacy, noise levels or traffic and parking conditions now existing in that area.

3. Irreversible commitment of any significant amount of non-renewable resources

The commitment of the Lax property and adjacent lands to the waterfront project is an appropriate use of this resource.

4. Pre-emption of the use, or potential use, of a significant natural resource for any other purpose.

The use of these lands for waterfront purposes is considered appropriate.

5. The Waterfront project as a pre-condition to the implementation of another undertaking

This would not appear to be the case since the achievement of the waterfront project is a goal in itself.

6. Generation of secondary effects (e.g. land development, population growth) likely to significantly effect the environment.

The implementation of the waterfront master plan is likely to have significant secondary effects in a number of areas. These are discussed below under the following headings; regional economic impacts;

downtown impacts; and industrial and port area impacts.

a) Regional Economic Impacts

The charts in Appendix A detailing the regional economic impacts of the Hamilton Waterfront Master Plan have been prepared by the Economic Development Department of the Regional Municipality of Hamilton Wentworth.

The economic impact analysis is divided into two phases. The Phase I is concerned with the development of the principal recreational and marina areas and Phase II with the hotel, office and retail development on the lands the north and east of the recreational area.

In summary, Phase I would generate approximately 100 full time jobs and 205 part time jobs. Phase II might create 2244 full time jobs upon full occupancy. Some 650 persons years of construction employment would be generated in Phase I and approximately 1,100 in Phase II. Total direct and indirect tax generation would be $1.696M in Phase I and $15.238M in Phase II.

b) Downtown Impacts

Downtown Hamilton is increasingly seeing the benefit of a coordinated series of improvements and new facilities that have been developed over the past decade or so. Lloyd D. Jackson Square, a major downtown shopping centre, has been expanded adding another major office tower and the new Sheraton Hotel. The Convention Centre and Hamilton Place have recently been augmented by the completion of the Copps Coliseum, a 17,000 seat indoor arena. Landscaping and improvement of the Gore Park area have had a significant effect on the ambiance of the downtown, an effect likely to be extended by the proposed improvements to James Street North.

All of these changes indicate a coordinated policy of diversifying the economic base of Hamilton away from heavy industry and manufacturing towards a more office-based, service economy.

The development of the waterfront, although at some distance from the downtown, is likely to have a very positive impact on these lands. Hamilton will increasingly be competing with the other sub-centres around Metropolitan Toronto for "back-office" type

space. Comparisons between Hamilton and say Mississsauga or Scarborough as a potential secondary office location will be made not only on the basis of cost and accessibility, but also on the basis of their lifestyle and amenity potential. Transformation of the image of the waterfront from an industrial harbour to a recreational resource will greatly increase the attractiveness of the Hamilton region as a place to relocate or start new economic enterprises.

c) Industrial and Port Area Impacts

The proposed waterfront development is immediately adjacent to a significant section of the port operated by the Hamilton Harbour Commissioners. Development of the waterfront will both be affected by and will have significant impacts on the long-term land use of this area.

The Hamilton Harbour Commissioners are currently only operating for port use Piers 8 and 10. Piers 5, 6 & 7 are used for by the Hamilton Yacht Club and for land support to the H.H.C. marina. Pier 8 has major warehouse storage areas and large open lot areas for general cargo. On the land side of the pier the Commission has leased land to a substantial trucking operation. Pier 10 is primarily occupied by industrial and institutional uses, such as construction companies, the Amstel Breweries and the Mission to Seamen. Between these two H.H.C. piers is Pier 9, occupied H.M.C.S. Star. To the east of this area are the large industrial areas occupied by major manufacturing and steel producing uses.

Use of Piers 8 & 10 is limited and has been declining along with all other general cargo handling in Lake Ontario ports. The current plans of the H.H.C. are however to maintain this area in port use, although at the same time creating new general and bulk cargo areas in the East Port.

Because of the limited nature of port activities in this area of the port no detrimental impact is foreseen on recreational use. In fact the level of such use sponsored by the H.H.C. is already quite high and the port uses are seen in a positive rather than a negative use. Immediate uses are generally light and clean and not incompatible with such recreational use. Heavy industry is located at a considerable distance and does not impact significantly on the area.

Development of this area for residential, office and retail use could take place initially on Piers 5, 6 & 7, to the south and west of the operating port, without greatly disrupting port operations. However, any major development of Pier 8 would not be compatible with continued port use, which would therefore presumably need to be relocated to the East Port.

Such a land-use transition is probably beneficial in the long-term given the impact on the economy and image of this Hamilton area of waterfront revitalization. No job loss should occur if such transition is seen as a part of a relocation of port activities to an area where no conflicts with recreational, residential and commercial uses is likely.

7. Blocking of views or adverse effect on the aesthetic image of the surrounding area

The waterfront master plan has attempted to keep all buildings on the site low, except for unique structures like the Crystal Palace and Cine Crystal which are intended to enhance views. Development immediately west of the North End neighbourhood has been kept to heights below the ridge line of the bluff.

8. Change to the social structure or demographic characteristics of the surrounding neighbourhood or community.

Rosemary Campbell's letter of February 19, 1986 adequately described the probable neighbourhood change.

9. & 10. Overtaxing of existing facilities,community services (e.g. transportation, schools, parks)

As per Rosemary Campbell's letter of February 19, 1986

11. Controversy

A remarkable degree of consensus exist on the Waterfront Master Plan. Opposition to exists only to one element, the waterfront drive linkage, and is extremely limited.

12. Road Widening Effects

As per Rosemary Campbell's letter of February 19, 1986, and the anticipated North End traffic study.

13. Effect on Existing Plans

The existing Official Plan context was described in Section 1.

14. Streetscape and Linkages

As per Rosemary Campbell's letter of February 19, 1986.

I hope these comments are helpful. Please contact me if you require any further information or elaboration.

Yours very truly,

BERRIDGE LEWINBERG ASSOCIATES

Joe Berridge
Partner

c.c. Jayne Tollefsen

APPENDIX 8

EFFECT OF PROPOSED UNDERTAKING ON EXISTING COMMUNITY SERVICES

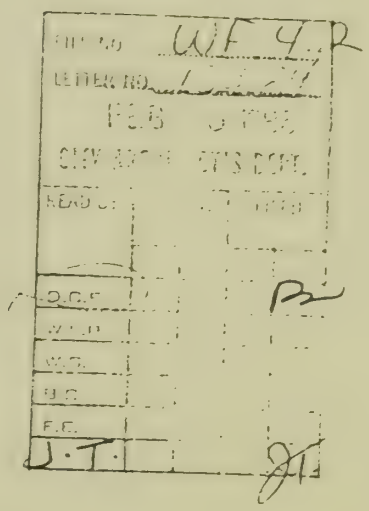
Regional Engineer's Report on Servicing Information

THE REGIONAL MUNICIPALITY OF HAMILTON-WENTWORTH

Department of Engineering
71 Main Street West, Hamilton, Ont. L8N 3T4 (416) 526-4170

Refer to File No. G71-02
Attention of L. Harding
Your File No

February 5, 1986



The Corporation of the
City of Hamilton
Office of the City Architect

Attention: Dave Freeman, City Architect

Hamilton Waterfront Master Plan
Your Request for Servicing Information

Gentlemen:

Storm Sewage

All new systems in the area can outlet to Hamilton Harbour. The existing infrastructure will not have increased usage as a result of this development.

Sanitary Sewage

This area was projected to be industrial land when the existing pumping station was designed approximately 15 years ago. The present proposed usage will result in a downgrading of population density.

The main treatment plan presently serves approximately 350,000 people. The person equivalency factor for the subject area would be approximately 2000.

Waterworks

Based on a 2000 person equivalency there would be a consumption of approximately 450,000 l. per day. Maximum day consumption for the pressure district in which the subject area is located has been in excess of 270,000,000 l. Reservoir capacity is approximately 380,000,000 l.

As can be seen from the above, there will be a minimal effect on existing sewage and waterworks capacities.

K.A. Brenner
Environmental Planning Engineer

LH:mc

APPENDIX 9

HAMILTON WATERFRONT MASTER PLAN

REVISED ECONOMIC IMPACTS

HAMILTON-WATERFRONT MASTER PLAN-REVISED ECONOMIC IMPACTS (03/18/86)

A. EMPLOYMENT

PHASE I - WATERFRONT DEVELOPMENT

Direct Employment — Number of Jobs Created

Employer	Full Time	(Salaries)	Part Time	(Salaries)	Summer	(Salaries)
Restaurants	20	($363,000)	12	($81,240)	50	($157,000)
Retail Outlets	8	($145,200)	7	($47,390)	3	($9,420)
Cine Crystal	5	($90,000)	7	($47,390)	-	-
Lagoon-						
Swimming (4 Lifegaurds)	-	-	-	-	4	-
Skating (4 Attendants)	-	-	4	($ 9,000)	-	-
Administration	7	($253,000)	-	-	10	($35,000)
Children's Play Area	-	-	-	-	3	($9,420)
Tour Boats	8	(N.A)	7	(N.A)	-	-
Marina	11	($258,800)	-	-	-	-
Gondola	-	-	-	-	5	($15,700)
Hamilton/						
Scourge Replica	-	-	-	-	5	($15,700)
Parking Attendants	-	-	1	($6,770)	3	($ 9,420)
Canoe/Bike Rentals	-	-	1	($6,770)	4	($12,560)
Paddling Pool	-	-	-	-	3	($ 9,420)
Aquatic Centre	6	($108,900)	1	($6,770)	7	($21,980)
TOTAL DIRECT	65	($1,219,650)	40	($205,330)	97	($315,620)
Indirect Employment	35	($ 609,825)	20	($102,665)	40	($157,810)
TOTAL PHASE I EMP.	100	($1,829,475)	60	($307,995)	145	($473,430)

PHASE II - LAND BASED DEVELOPMENT

Direct Employment — Number of Jobs Created

Employer	Full Time	(Salaries)	Part Time	(Salaries)	Summer	(Salaries)
Hotel	60	($734,072)	N.A.	(N.A.)	N.A.	(N.A.)
Office Development	1190	($27,965,000)	-	-	-	-
Retail Development	246	($ 4,305,000)	-	-	-	-
TOTAL DIRECT	1496	($33,004,072)	-	-	-	-
Indirect Employment	748	($16,502,036)	-	-	-	-
TOTAL PHASE II EMP.	2244	($49,506,108)	-	-	-	-

B. INCOME AND REVENUES

PHASE I - WATERFRONT DEVELOPMENT

Direct Income and Revenue

Source	Dollars
Employment (Salaries less tax)	$2,088,720
Restaurants (Net revenues less labour costs, taxes, materials, miscellaneous)	68,400
Retail (Net revenues less labour costs, taxes, materials, miscellaneous)	72,960
Marina (Net Revenues)	143,640
Materials and Supplies Purchased	$1,052,760
TOTAL DIRECT	$3,426,480
Indirect Income and Revenue	$1,713,240
TOTAL PHASE I INCOME AND REVENUE	$5,139,720

PHASE II - LAND BASED DEVELOPMENT

Direct Income and Revenue

Source	Dollars
Employment (Salaries less tax)	$39,604,887
Restaurant (Net revenues less labour costs, taxes, materials, miscellaneous	166,000
Retail and Office Revenue	N.A.
Materials and Supplies Purchased	851,000
Hotel Room Revenue (Less taxes and expenses)	225,264
TOTAL DIRECT	$40,847,151
Indirect Income and Revenue	$20,423,575
TOTAL PHASE II INCOME AND REVENUE	$61,270,726

C. TAXES

PHASE I - WATERFRONT DEVELOPMENT

Direct Taxes

Source	Dollars
Personal Income Tax (Assume 20% of Gross Salaries)	$ 522,180
Corporate Taxes (Assume 43% of Net Revenue)	215,000
Business and Property Taxes (Assume $1.13 sq. ft. per developed floor area)	145,963
Sales Tax - Restaurants (Assume 10% of Revenues)	126,320
Sales Tax - Retail (7% of Revenues)	42,000
Sales Tax - Purchase of Materials and Supplies (7% of purchase costs)	79,240
TOTAL DIRECT	$1,696,055
Indirect Taxes Generated	$ 565,352
TOTAL PHASE I TAXES	$1,696,055

PHASE II - LAND BASED DEVELOPMENT

Direct Taxes

Source	Dollars
Employment (Assume 20% of Gross Salaries)	$9,901,221
Corporate Taxes (Not including Retail & Office Development taxes paid)	53,316
Business and Property Taxes (Not including Retail & Office floor area)	56,500
Sales Tax (Not including Retail & Office, but including materials and Hotel room revenue)	205,238
TOTAL DIRECT	$10,219,275
Indirect Taxes	$ 5,109,638
TOTAL PHASE II TAXES	$15,328,913

D. CONSTRUCTION

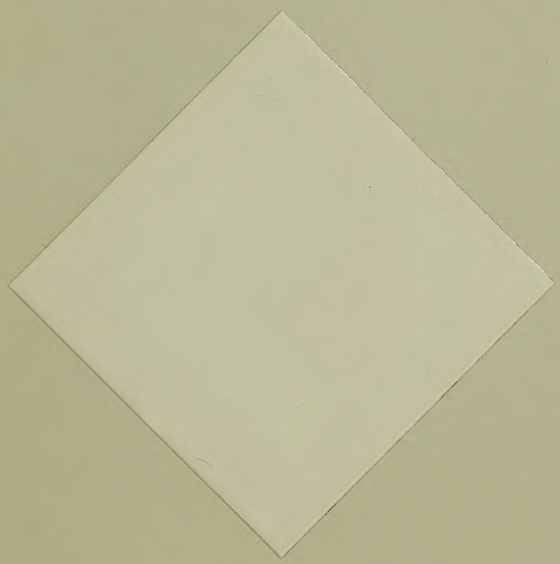
PHASE I - WATERFRONT DEVELOPMENT

It is estimated that 650 person years of construction employment will be created. This should generate almost $19 million in wages.

PHASE II - LAND BASED DEVELOPMENT

Approximately 1100 person years of construction employment should be created in Phase II. This should generate over $29 million in wages.

ASSUMPTIONS - The figures listed are based upon a fully operational facility, open seven days/week for eighteen weeks, twelve hours per day during summer, three days/week for twelve hours/day for thirty four weeks, four days/week for five hours/day for thirty four weeks equalling a 3416 hour season; Full time employment is based upon a 1815 hour person year. Part time employment basd upon a 1354 hour year and summer employment based upon a 628 hour season; Wages are based upon an average of $10/hour for full time and $5/hour for part time and summer employees; The figures were derived from anticipated staffing requirements based upon similar facilities or calculated from the labour component of expected revenues. Retail employment is based upon 1 employee/610 sq. ft. of development, office employment 1 employee/210 sq. ft. Average wages for retail $17,500/annum, for office $23,500/annum, and construction $26,500/annum.



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